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INDUSTRIAL-ARTS MAGAZINE

Vol. VIII MAY, 1919 No. 5

THE COURSE OF STUDY FOR SMITH-HUGHES WORK IN TRADE AND INDUSTRY

Edward H. Crussell, Assistant Supervisor Teacher Training, Trades and Industries, University of Washington

THOSE schools, or communities, about to engage in vocational education under the provisions of the Smith-Hughes Act, will discover, or have already discovered, that it is necessary to submit to their State Board of Vocational Education, plans and specifications of the courses of study they intend to use. This article is written with the idea of affording some slight assistance in the preparation of this work.

While it is a fact that the state board looks to the superintendent of schools as being responsible for the course of study, the shop teacher will usually find that the work of thinking out, planning, and organizing these courses is, to a large extent, turned over to him.

The good teacher will naturally approach this problem in the proper attitude, and instead of looking upon it as something outside of his sphere of activities which he is not paid for doing, will consider it an opportunity to be seized with joy and made the most of. The efficient teacher should surely be able to do better work, and get more pleasure out of his work, when following a course of study that he has planned himself.

The course of study should include:

(1) A time schedule showing the number of years, days, hours, etc., in the course.

(2) A skeleton course, covering the entire three years, and showing how much time is to be devoted to: A. Practical shop work. B. Related work. C. Non-related work: for each week.

(3) A syllabus, showing the subject matter, or content of the course, arranged by units and indicating the number of hours in each unit.

(4) A detailed outline of each unit; all, as illustrated later.

The related subjects, mathematics, science, drawing, industrial history, related English, etc., should be outlined sufficiently to show the subject matter to be covered, but need not, in this case, be listed in minute detail. The course of study must contain work in English and civics, and may allow for electives of other non-vocational subjects.

If but one year of a three year course is being offered, the skeleton course, unit course, and detailed outline, should be made for the entire course. It is much easier to arrange in this way, and it is better that the pupil should thoroly learn a part of the course, than partly learn all of it.

The shop work and related work are subject to federal aid, the non-related work is not. The law requires 50 per cent of practical shop work; 30 to 35 per cent of related work, and 15 to 20 per cent of non-related work. This time is to be reduced to hours and listed as in the following examples.

Time Schedule.

One course=3 years.
One year=2 semesters.
One semester=18 weeks.
One week=5 days.
One day=6 hours.

One course = { 1620 hours of shop work, 972 to 1134 hours related work, 486 to 648 hours non-related work.

The foregoing is the minimum amount of time per week required by the law; if more time is to be provided for, the percentage of shop work, related work, and non-related work, remain the same.

Skeleton Course Machinist's Trade—Three Years.

		Hours per week
First Year.		
Shop Work.	Machine shop practice on "useful, or productive basis"	15
	Shop arithmetic	2½
	Shop drawing: sketching, blue print reading	4
Related Work.	Biography of Inventors—history of inventors	2
	Shop materials, inventories, etc.	2
Non-related.	English, Civics	4½
	Total	30
Second Year.		
Shop Work.	Machine shop practice on "useful, or productive basis"	15
	Shop arithmetic	3
	Shop geometry and mensuration	2½
Related Work.	Metallurgy	2
	Shop sanitation; First aid	1
	Elementary mechanics	2
Non-related.	English, Civics	4½
	Total	30
Third Year.		
Shop Work.	Machine shop practice as before	15
	Shop arithmetic	1
	Shop drawing	2
Related Work.	Mechanics	2
	Industrial history	2
	Economics	2
Non-related.	English—An elective	6
	Total	30

The foregoing should be used as an illustration only, not blindly followed as a perfect example, because

it must be frankly recognized that a course cannot be planned to meet the need of all communities.

The Day Unit Course.

The controlling purpose of a day unit course, is to give instruction to pupils who are over 14 years of age, who have not yet entered upon employment, but who are planning or preparing to follow some specific trade or pursuit.

In arranging the content of your course by units, many things must be taken into consideration, but first, last, and all the time, the most important thing is the pupil. The content of your course must be such as will make it possible for the student to secure more wages and advance more rapidly in the particular trade you are teaching. The course should be so arranged, that whether the pupil stays in it one day, one month, one year, or for the entire length of the course, he has secured the best training that he could possibly get in that time. The pupil usually starts the course with the idea of completing it, but many things occur to upset his plans, and these occurrences must be taken into consideration.

In no case must there be any hint of the pupil being exploited for the benefit of the employer, but at the same time we must remember that when a pupil leaves school before the completion of the course, it is usually because of necessity and because he is compelled to go to work, and the employer's needs, and the pupil's ability to supply what is needed, will be deciding factors in the ease with which the pupil secures and retains employment. Therefore, the things which will make the pupil of value to his employer, are the things which the pupil really needs and they must be provided for. This argument of course, is only for those states which do not have compulsory education to an advanced age.

In connection with the foregoing, we may consider the advisability of different ways of arranging the course, i. e., whether it is better to have a pupil stay with one machine or process until he has a fairly good understanding of it, or whether we shall let him work a day on this machine and a day on that. In a word, we may ask whether it is better for a pupil with a month's training to have a small amount of knowledge of every machine in the shop, or to have a more thoro knowledge of only one machine, such as the drill or the lathe.

The equipment needed in the school shop is another factor that must be taken into consideration when planning the course. For example, perhaps the most simple machine in the machine shop is the drill press, and because of this, many instructors often fill the first unit of the machine shop course with drilling and drill press work. This would be well enough, but with a beginning class the instructor is not able to give as much individual instruction as he is with classes that are pretty well trained—he must give more class instruction—consequently, with a class of fifteen or twenty green learners, he will need that many drilling machines if he has made no preparation for other elementary work in his course of study.

We may again point out, that the pupil is the first consideration, and if it can be proved that good instructional conditions require the twenty drilling machines, then we should be prepared to ask for them, and continue asking for them until we get them. But, in the matter under consideration, we must realize that the work to be done on a drilling machine, when compared with the entire machinist's trade, is hardly of sufficient importance to make it worth while for the educational department to go to the expense of twenty machines.

The following unit course for foundry work, and the detail of same was prepared by Mr. James S. Lane, a student in one of the author's classes; it may be taken as a fair example. Much help may also be obtained from the bulletins issued free by the federal board for vocational education, especially from Nos. 8 and 10. But do not too blindly follow the ideas of previous thinkers, do some constructive work on the matter yourself.

UNIT COURSE FOR FOUNDRY WORK.

Unit Letter and Number	*Name of Unit*	*Time Required to Complete Unit*
F.1	Bench molding	325 Hrs.
F.2	Light floor molding	450
F.3	Cleaning castings	50
F.4	Core making	225
F.5	Cupola management	150
F.6	Heavy green sand molding	300
F.7	Dry sand molding	300
		1800 Hrs.

Detail of the Units.

Unit F.1. Bench Molding.

Division	*Jobs*	*Time*
F.1.a	Tempering sand	26 Hrs.
F.1.b	Molding small flat back patterns	30
F.1.c	Skimming	15
F.1.d	Molding simple split patterns	25
F.1.e	Molding small patterns; coping down	24
F.1.f	Simple mold with dry cores	30
F.1.g	Simple mold with green cores	30
F.1.h	Molding with small pattern board	20
F.1.i	Molding with small follow board	15
F.1.j	Molding with green sand match	20
F.1.k	Molds requiring skim gates	30
F.1.l	Molding segmental patterns	30
F.1.m	Pouring	30
		325 Hrs.

Unit F.2. Light Floor Molding.

Division	*Jobs*	*Time*
F.2.a	Molding medium size flat back patterns	25 Hrs.
F.2.b	Molding medium size split patterns	40
F.2.c	Molds requiring coping down	30
F.2.d	Molding with follow board	20
F.2.e	Molding with dry cores	40
F.2.f	Molding with green cores	40
F.2.g	Molding thin pieces	35
F.2.h	Open molds	15
F.2.i	Molding grate bars	40
F.2.j	Mold with cheek	25
F.2.k	Mold with pattern board	20
F.2.l	Molding pieces with heavy and thin parts	40
F.2.m	Molding pulleys and wheels	40
F.2.n	Molding pulleys with loose rims	20
F.2.o	Molding gears	20
		450 Hrs.

Unit F.3. Cleaning Castings.

Division	*Jobs*	*Time*
F.3.a	Shaping out	10 Hrs
F.3.b	Using tumbling barrel	8
F.3.c	Grinding	8
F.3.d	Chipping	6
F.3.e	Brushing	5
F.3.f	Rubbing	5
F.3.g	Pickling	8
		50 Hrs

Unit F.4. Core Making.

Division	*Jobs*	*Time*
F.4.a	Preparing core sand	15 Hrs.
F.4.b	Making small cylindrical cores	20
F.4.c	Making small rectangular cores	20
F.4.d	Baking	20
F.4.e	Pasting and slurrying	15
F.4.f	Blacking	15
F.4.g	Making small cores requiring wiring	25
F.4.h	Using core machine	20
F.4.i	Large cores requiring rodding & venting	25
F.4.j	Making thin intricate cores	25
F.4.k	Shaping cores with a sweep	25
		225 Hrs.

Unit F.5. Cupola Management.

Division	*Jobs*	*Time*
F.5.a	Cleaning cupola	18
F.5.b	Lining cupola	10
F.5.c	Patching cupola	15
F.5.d	Lining spout and building breast	9
F.5.e	Lining ladles	15
F.5.f	Weighing iron and coke	20
F.5.g	Charging cupola	15
F.5.h	Operating cupola	15
F.5.i	Estimating weight of casting	8
F.5.j	Estimating amount of iron to be melted	9
F.5.k	Calculating mixtures	8
F.5.l	Figuring cost of castings	8
		150 Hrs.

Unit F.6. Heavy Green Sand Molding.

Division	*Jobs*	*Time*
F.6.a	Preparing sand	10 Hrs.
F.6.b	Making facing	5
F.6.c	Operating power riddle	5
F.6.d	Operating air rammer	10
F.6.e	Molding machine frame	35
F.6.f	Skin drying	10
F.6.g	Molding lathe bed	40
F.6.h	Molding Machine base	35
F.6.i	Molding engine bed	40
F.6.j	Molding drum	35
F.6.k	Molding bollards	35
F.6.l	Molding large pipe	40
		300 Hrs.

Unit F.7. Dry Sand Molding.

Division	*Jobs*	*Time*
F.7.a	Tempering and preparing sand	15 Hrs.
F.7.b	Molding large spur gear	45
F.7.c	Blacking mold	20
F.7.d	Baking mold	15
F.7.e	Molding air compressor	50
F.7.f	Molding pump	50
F.7.g	Molding engine cylinder	55
F.7.h	Molding hydraulic cylinder	50
		300 Hrs.

The hours should represent the time required by the student of average ability. Good work quickly done with a minimum of spoiled work, should be the test of efficiency. The methods of instruction must conform to the actual commercial shop practice, keeping in mind the individual method of instruction, rather than the group, or class, method.

And now a word of caution: In some trades, especially those having to do with woodworking, such as carpentry, cabinetmaking, patternmaking, etc., it is necessary that the student commence with a certain amount of hand work, in order that he may learn the use of the tools. This very fact causes some instructors to place altogether too much stress upon the acquisition of hand skill. This is an age of machinery, and from all present indications the ages to come will be even more so, and while, as already stated, a certain amount of hand skill is absolutely necessary, it is a serious mistake and a waste of time to place too much emphasis on it.

It may be well for the modern student of woodworking to learn the correct method of cutting a mortise by hand, or even to learn to do hand dovetailing, but it would be a mistake to keep him at work of this nature until be became an expert at it, especially when we realize that he may work for years at his trade without ever being called upon to do any of this class of work.

There is another thing to which attention must be turned and that is, related work. The shop teacher is too much inclined to the idea that the related work is none of his business, and because of this, any study he may have given the matter in the past has been of a perfunctory nature. While it is true that in many cases the shop teacher will not have to teach the related work, it is none the less true that to do the best and most effective teaching the shop teacher and related subject teacher must work in perfect harmony, and the better realization they have of each other's problems, the more likely is a condition of harmony to be the outcome.

Summary and Conclusion.

While the superintendent of schools is responsible for the course of study, the shop teacher will, in many cases, be called upon to plan and organize them.

The course of study must include the things outlined in the foregoing.

Each teacher must do his own thinking and plan his course for the best instructional conditions, keeping in mind the fact that the best interests of the pupil is to receive first consideration.

Skill in hand work is to receive proper attention, but too much stress must not be placed upon methods that modern machinery has made obsolete.

Attention should be given to the related work, even tho you do not expect to be called upon to teach it.

THERE is and can be no real art considered entirely apart and distinct from industry and the industrial life of the people.—*F. T. Carleton.*

Letter Essentials for the Commercial Design Student

Elizabeth Weiffenbach, Lafayette High School, Buffalo, N, Y.

(Part IV—Conclusion)

TEXT LETTERS.

TEXT lettering is necessarily limited in its use in commercial work because it is not legible enough and, broadly speaking, it requires more time and leisure to read than the modern public has time for.

The beginner generally has a preconceived notion that text alphabets such as the Old English and Uncial are the last word in lettering, and nine times out of ten he will laboriously work one of them into his first design unless headed off. This fault is by no means confined to the young student, but many times also to a certain class of artists who think lettering is a bore and beneath notice.

Fig. 48 is only one of the many Gothic or Text letters, and Fig. 49 is a commercial design showing an appropriate use of a Text letter as a means to emphasis. It makes the word Packard stand out very definitely. The Roman lettering in this design is beautifully drawn and the whole thing is exceptionally good.

Fig. 50 has a great deal of attractive force and is a beautiful design, but rather hard to read. In magazines intended for people of leisure its use is justified, but most people would not take the trouble to decipher the lettering.

Made in America
THE BUILDERS OF THE
Packard
HAVE STOOD PAT FOR SIXTEEN YEARS—THEY ENTERED THE AUTOMOBILE BUSINESS SERIOUSLY INTENT ON BUILDING THE BEST POSSIBLE CAR · THEY ATTAINED THEIR AMBITION AND THEY WILL FOLLOW THE SAME AIM AS LONG AS MOTOR CARS ARE BUILT & MEN DRIVE THEM
THE SAFEST CAR TO DRIVE & THE SAFEST MOTOR CAR INVESTMENT IS THE
Packard
CHASSIS IN TWO SIZES · TWENTY STYLES OF OPEN AND ENCLOSED BODIES THAT FIT EITHER
PACKARD MOTOR CAR COMPANY
DETROIT · MICHIGAN
Responsible Dealers in Principal Cities
ASK THE MAN WHO OWNS ONE

Fig. 49

Fig. 48

PEN WRITTEN LETTERS.

Lettering may be divided into two classes—those which are built up in a painstaking way, and those which are freely drawn with pens especially made for that purpose.

Recently there has been a tendency to use pen drawn letters in quite a good many commercial designs. A very wide use of this style is not very probable because it is not quite so legible as ordinary lettering or type, and also because it is a very difficult art to master. Besides that, the pubic is too conventional and prefers the old rather than the new. Really

Fig. 51

The Hampton Shops
in March will be in possession of the picturesque Gothic edifice which they have builded for themselves directly facing St. Patrick's Cathedral New York.
Here they will continue in accord with the creed they have for so many years expounded—that each piece of furniture in the home should have a meaning and emphasize its intimate relationship to the place it occupies.
The original methods they have devised for the exhibition of Hampton Reproductions in the new Building with its Great Hall, its Eleven Galleries and its score of subtly beautiful Room-interiors must prove of remarkable interest even to those not in immediate need of furniture
Hampton Shops
18 East 50th Street
facing St. Patrick's Cathedral
New York
HS

Fig. 50

Fig. 52

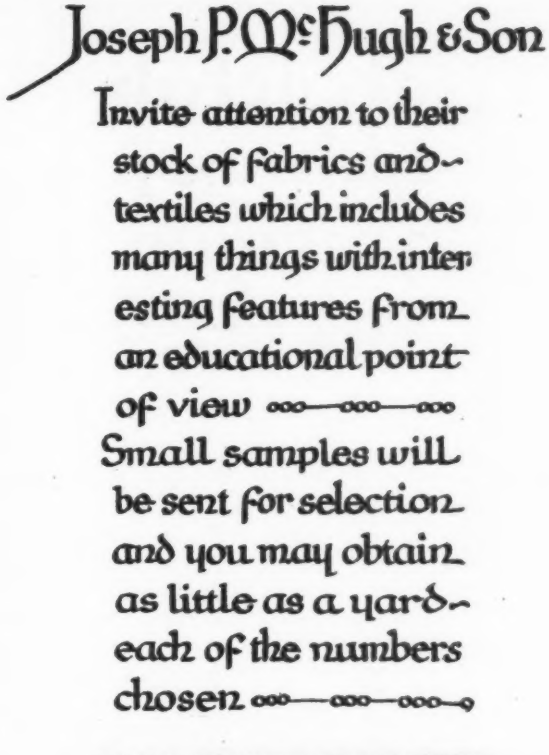

Joseph P. McHugh & Son
Invite attention to their stock of fabrics and textiles which includes many things with interesting features from an educational point of view
Small samples will be sent for selection and you may obtain as little as a yard each of the numbers chosen

Fig. 53

Fig. 54

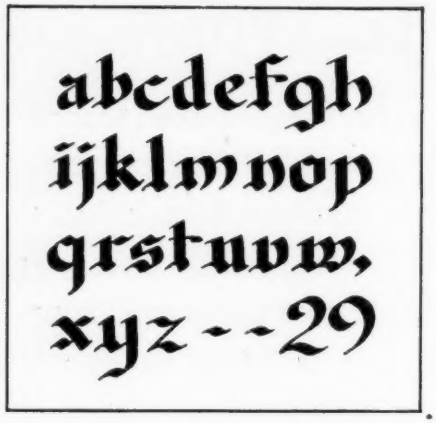


Fig. 55

great changes come slowly, and this may be only a fad of the day.

There are two kinds of modern pens adapted to pen writing. The broad pen comes with various widths of points which are cut at an angle of about 45°. This is a development of the old quill pen so much used in text writing centuries ago.

The other family of pens may be spoken of as round flat pointed pens, altho they have various names given them by their makers. This is used for quick, sketchy work such as show cards, signs, labels, etc. Its use seems to add a great deal of quaintness in style to most types of lettering. It is very much easier for pupils to handle than the broad pen.

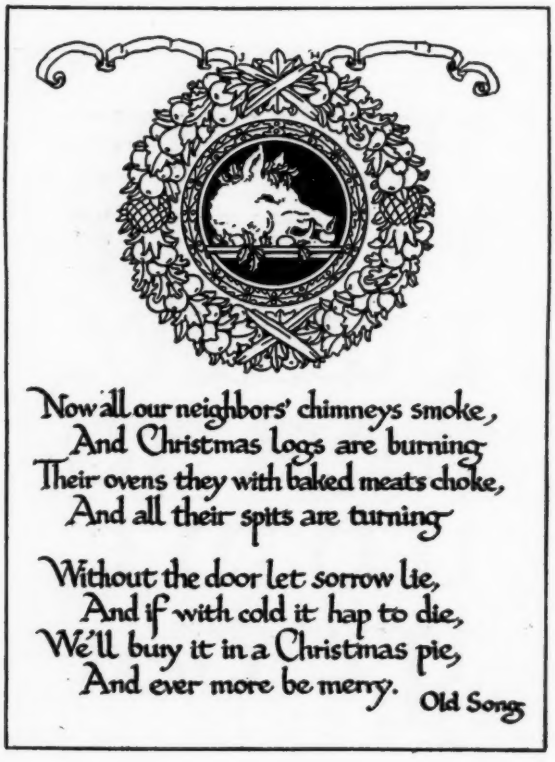

Now all our neighbors' chimneys smoke,
And Christmas logs are burning
Their ovens they with baked meats choke,
And all their spits are turning
Without the door let sorrow lie,
And if with cold it hap to die,
We'll bury it in a Christmas pie,
And ever more be merry.
Old Song

Fig. 56

Fig. 57

Fig. 58

Fig. 59

Where careful work is desired neither of these pens should be used, but lettering should be built up.

Fig. 51 gives the strokes used in broad pen writing and shows their use in capitals and lower-case Roman and Text. Fig. 52 is the Roman, and Fig. 53 shows a commercial example in sort of combination Text and Roman. Figs. 54 and 55 are examples of a simple Text letter written with the broad pen, and Fig. 56 is a Christmas card.

Much can be done with the ball-pointed pen in a free rendering of the alphabet. Fig. 57 was done with-

All the joys of the season
All the blessings of the day
Be yours at Christmas.
DESIGN FOR CHRISTMAS POST CARD
HELEN C JAEGER JANUARY 19 1917

Fig. 60

Fig. 61

Fig. 62

out any preliminary layout other than the drawing of light guide lines. Figs. 58 and 59 are adaptations of modern eccentric letters freely drawn. Where a certain freedom or charm is desired the ball-pointed pen is fascinating to work with. Fig. 60 shows a practical use of it by a student.

Figs. 61 and 62 were traced from the same original drawing. Fig. 61 was rendered with a fine pointed ball pen, and Fig. 62 was done with a broad pen.

Pen writing is still in its infancy and it remains to be seen what the growing use of it among art educators and commercial designers will develop in the future.

Scrap Book Suggestion. The student is advised to make a collection of scraps of lettering from commercial and other sources. This will keep his mind constantly on the subject, and unconsciously his judgment and taste will tend to improve. It will add much to his knowledge and will help him in his design work.

It is of inestimable value to begin a very definite filing system for these scraps. Nothing wastes so much time or destroys the desire to work than to have to look thru heaps of scrap material in order to find some desired thing.

SOME HELPFUL BOOKS ON LETTERING.

Letters and Lettering, by Frank Chouteau Brown.

Alphabets Old and New, by Lewis F. Day.

Lettering in Ornament, by Lewis F. Day.

Alphabets, by E. F. Strange.

Writing, Illuminating, and Lettering, by E. F. Johnston.

The Essentials of Lettering, by Robert Merklejohn and Thomas E. French.

Lettering, by Thomas Wood Stevens.

Letters and Letter Construction, by Trezise.

SOME FACTORS AFFECTING VOCATIONAL GUIDANCE WORK IN HIBBING, MINNESOTA

G. W. Willett. Principal of Hibbing High School

IN any community, existing conditions within the school as well as without the school must be known before any scientific guidance work can be established. In our opinion, the internal survey of the school system itself is the place to begin securing the data on which to establish guidance. A high school should, and usually does in a large measure, reflect the spirit of the community in which it exists, but no generalization of pupil and community needs is sufficient for successfully solving the problems of individual pupils. The oft-repeated saying that all learning proceeds from the known to the associated unknown is as applicable in guidance work as in purely academic fields. Hence, we need to know the pupil's accumulated information as a basis on which to work.

In order to give a setting to the community in which the Hibbing high school is located, we here digress. Hibbing is located in northern Minnesota on the "Iron Range." As may be inferred from this fact, the industry of the community is largely iron-mining. The iron ore is in a disintegrated form and hence is easily mined. Mines are of two types: (1) The "underground mines" are often many hundreds of feet deep to the ore and there several hundred feet deep in ore. Mining in them is either by pick and shovel or by specially constructed machines. In the last few years, most of the underground mines have been electrified. Very little skilled labor is needed for the actual mining. (2) The "open-pit" mines are large excavations representing the removal of considerable "over-burden" and then the removal of ore. Mining in the "open-pits" is done by steamshovels which dip up the earth a ton or more at a time and dump it into railroad ore cars standing near. A steamshovel requires a few skilled men and then a gang of unskilled laborers of the crudest type. Track gangs, clean-up gangs, and various other gangs are composed of unskilled laborers. Engineers—locomotive, electrical, civil, and mining—craners, "shot" men, chemists, railroad men, and office forces constitute a large share of the professional and better paying positions. Skilled mechanics and machinists are well paid.

Aside from the mining industry, there are few fields of work. The community consists of 16,000 to 20,000 persons and has call for about the usual occupations to care for such a population. Farming is just beginning to develop but has no great influence on the community. Lumbering has just ceased to be an active industry. The population is largely foreign. Recently, a census showed that there were 26 nationalities represented. The largest representation of any nationality is that of the Finns. No definite organization of laborers has been countenanced by the mining companies. In 1916, rather serious difficulties arose with the I. W. W. but no recent trouble has occurred. Radical ideas of socialism are prevalent among certain of the foreign elements. The community has prided itself on being "the richest village in the world." This idea has been interpreted by some of the growing generation to mean that life should be made easy for them.

The school system is organized on the six-and-six plan with the upper six grades housed together in one building. In addition to the six years' high school, two years' college work is offered in the high school building. In the seventh and eighth grades, courses are given in woodwork, forging, sewing, cooking, drawing, music, and commercial arithmetic. All other courses, in the seventh and eighth emphasize vocational materials to a greater or less extent. Below is a copy of the course of study for the upper four years of the high school.

Hibbing State High School Course of Study.

First Year.

English I x.
Algebra.
Latin Grammar.
First Year Science.
Woodwork.
Forging.
Music.
Printing.
Mechanical Drawing.
Sewing.
Art.
French I.
Ancient History.
Botany.

Second Year.

English II x.
Plane Geometry.
Caesar.
Ancient History.
German II.
Bookkeeping I.
Woodwork.
Cooking.
Forging.
Music.
Printing.
Mechanical Drawing.
Electricity I.
Botany.
French.

Third Year.

English III x.
Higher Algebra and Solid Geometry.
Cicero.
Physics.
Med. and Mod. History.
Bookkeeping II.
Shorthand I.
Typewriting.
Public Speaking I.
Music.
Electricity II.
Millinery.

Fourth Year.

English IV x.
High Algebra and Solid Geometry.
Virgil.
Chemistry.
American History and Government.
Economics and Commercial Law.
Shorthand II and Typewriting.
Public Speaking.
Music.
Teachers' Training Course.
Electricity III.
Trigonometry.
Public Speaking II.

Subjects marked "X" are required. Two years Latin, German or French must be taken before any credit is given.

Election of high school work is cared for as follows:

A course of study is given to the pupil. He is supposed to take it home to his parents for consultation. Next, he comes in to see the principal, and together the pupil and principal, unscientifically, map out a course for him by mutual agreement or compromise. The pupil takes a card with the suggested course, home and after having it signed by the parent, returns it to the principal. The question is "Who chose the course?" We, frankly admit, that in most cases, it was the principal as questions usually are referred to him for final judgment.

The writer more and more realizes his own fallibility and is seeking to find grounds for more satisfactory curricular determination. Can such material be secured out in the world? Some of it no doubt but why not find out all we can about the pupil as a basis for his needs? Formerly, we asked a youngster what he expected to do when thru school and then tried to fit the course to the "chosen" career. The trouble arose when the chap who wanted dentistry one year came back and announced he expected to be an electrical engineer on the following year, or some similar contrasting couplet. In School and Society, Mar. 16, 1918, the writer reported a study covering approximately three hundred pupils, which showed that permanence of interest was, for the group, conspicuous by its absence. How then proceed?

We simply plan to secure all the information possible on the individuals and groups with which we deal and to keep adding to this cumulative data, hoping to have data sufficient to do some good with some cases at least. We report here certain phases of a study secured from a questionnaire issued to 639 pupils on Mar. 20, 1918, between the hours of nine and ten o'clock. The questionnaire contained 23 questions. The pupils were allowed fifteen minutes without consultation for answering. Work of this type is carried on so often in this high school that pupils are not unused to the method employed. There are similar results from two preceding years but they will not be discussed here.

What types of homes furnish us, our pupils? The last question on the list was "What language is spoken in your home?".

If all our pupils come from homes where only English is spoken, our reaction to the advice the pupils may receive from home will be different from what it is when such advice is given out of the experience of Austrian subjugation of a Polish Jew or a Croatian. Certain racial characteristics are discernible in the Finn while others characterize the Italian. If the home is still near enough to the old country that the foreign language is used a part or all of the time, we have a peculiar problem. Herewith we give this data in tabular form. The tabulation is arranged as a sex-grade-language table and should be read as follows: "Fourteen seventh grade boys come from homes in which the Finn language is spoken, nine seventh grade boys come from homes in which the Italian language is spoken, etc."

What does this table reveal? Many things. One hundred and one of the pupils come from homes where Finn is spoken. Some of the homes are loyal to the Red Guard and some to the White Guard. Some are the I. W. W. Finns and some are not. Some are very loyal to the United States and some are decidedly "wobbly" in their allegiance. This nationality represents almost one in six of the pupils. In our experience, there is no nationality whose children require as

Table I.

	BOYS—GRADES.							GIRLS—GRADES.							
Language in home	7th	8th	9th	10th	11th	12th	Total	7th	8th	9th	10th	11th	12th	Total	Grand Total
Finn	14	9	9	3	3	4	42	13	19	14	6	3	4	59	101
Italian	9	5	3	2	..	..	19	10	3	3	2	1	1	20	39
Swede	6	9	5	4	7	1	32	14	13	8	8	1	5	49	81
Jewish	1	4	..	5	..	..	10	3	1	2	4	4	2	16	26
Slovenian	1	2	..	..	..	..	3	1	..	1	3	..	2	7	10
Crotian	1	2	..	..	1	1	5	..	..	..	1	..	..	1	6
Norwegian	2	1	1	..	..	1	5	2	1	..	1	..	..	4	9
Austrian	4	2	1	..	..	..	7	2	1	..	1	1	..	5	12
German	..	1	..	..	..	..	1	..	..	2	1	1	..	4	5
Slovak	..	..	..	..	..	..	0	..	..	..	1	..	..	1	1
French	1	1	..	..	..	..	2	1	1	4	2	..	..	8	10
Flemish	..	..	1	..	..	..	1	..	..	..	..	..	..	0	1
Swede-Finn	2	..	..	..	..	..	2	..	1	..	..	..	..	1	3
Tyrolean	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Danish	..	..	..	..	..	..	0	1	..	..	..	..	..	1	1
Polish	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Total	42	37	20	14	11	7	131	47	40	34	30	11	14	176	307

much tactful individual care as does the Finn. On the other hand, there is no nationality, American included, that is so desirous of securing a good education.

Eighty-one children come from Swedish homes, 39 from Italian homes, 26 from Jewish homes, twelve from Austrian homes, ten from Slovenian homes, ten from French homes and nine from Norwegian homes. Sixteen foreign tongues are mentioned. There is little doubt that the number of cases of homes in which a foreign language is used is under-stated rather than over-stated. Some pupils are diffident about the matter, especially if that language chances to be German, Austrian, or Bulgarian.

Let us look at the table from another point of view. Eighty-nine out of 167 seventh graders come from foreign-speaking homes. Seventy-seven out of 132 eighth graders come from the same type of homes. This might indicate that more of the children from the foreign homes drop out early. However, it is at least partially due to the fact that there are fewer children of the ages of those grades among Italian, Austrian and some other races. This is due to peculiarities of immigration. One hundred and thirty-one boys out of 271, and 176 girls out of 368, making a total of 307 pupils out of 639 in this study, were under the influence of a foreign tongue at least a part of the time. Varied comments were made by those reporting. Some reports indicated that the foreign language was only spoken "sometimes." Other pupils reported that "parents spoke" the foreign language while the children spoke English. Some reported that the foreign language was used but that "sometimes" English was spoken.

The gravity of the situation is seen when we consider that over fifty per cent of the seventh and eighth graders come from foreign speaking homes and when we further note that almost one-half of the entire group come from such homes.

Table II.

March 21, 1918.	BOYS.							GIRLS.							
Occupation	7th	8th	9th	10th	11th	12th	Total	7th	8th	9th	10th	11th	12th	Total	Grand Total
No choice	33	26	30	12	13	5	119	19	17	22	24	7	5	94	213
Engineering	6	13	5	6	1	1	32	..	..	..	..	..	..	0	32
Electrical Eng.	1	4	2	5	8	2	22	..	..	..	..	..	..	0	22
Civil Eng.	1	1	1	1	..	..	4	..	..	..	..	..	..	0	4
Mining Eng.	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Locomotive Eng.	..	..	1	..	..	..	1	..	..	..	..	..	..	0	1
Radio Eng.	..	..	..	1	..	..	1	..	..	..	..	..	..	0	1
Surveyor	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Mechanic	4	1	2	..	1	..	8	..	..	..	..	..	..	0	8
Auto-mechanic	..	1	..	..	..	1	2	..	..	..	..	..	..	0	2
Machinist	1	2	..	..	..	..	3	..	..	..	..	..	..	0	3
Sewing	..	..	..	..	..	..	0	..	..	1	..	..	..	1	1
Dressmaker	..	..	..	..	..	..	0	..	..	2	..	..	..	2	2
Milliner	..	..	..	..	..	..	0	..	..	..	1	..	..	1	1
Nurse	..	..	..	..	..	..	0	10	5	8	4	3	1	31	31
Druggist	..	..	..	2	..	..	2	..	..	..	..	..	..	0	2
M'g'r of Store	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Banker	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Clerk	1	1	..	..	..	..	2	1	2	..	..	..	..	3	5
Bookkeeper	2	..	..	..	..	..	2	2	3	2	4	1	1	13	15
Stenographer	1	..	..	..	..	..	1	9	5	9	16	10	7	56	57
Business	2	..	1	..	..	..	3	..	..	..	..	..	..	0	3
Grocer	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Office-work	4	..	..	1	..	1	6	2	..	..	..	..	..	2	8
Salesmen	..	1	1	..	..	..	2	..	..	..	..	..	..	0	2
Store-keeper	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Furniture Store	..	..	..	1	..	..	1	..	..	..	..	..	..	0	1
Brakeman	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Railroader	1	..	1	..	..	..	2	..	..	..	..	..	..	0	2
Conductor	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Physician	2	1	3	1	..	..	7	..	..	..	..	..	..	0	7
Lawyer	2	1	..	1	1	..	5	..	..	..	..	..	..	0	5
Architect	..	..	..	1	..	..	1	1	..	..	..	..	..	1	2
Dentist	..	..	..	..	..	1	1	..	..	..	..	..	..	0	1
Teacher	..	..	..	..	..	..	0	20	24	12	11	12	13	101	101
Gym Teacher	1	..	..	..	..	..	1	..	2	4	1	1	3	11	12
Cooking teacher	..	..	..	..	..	..	0	2	..	1	..	..	..	3	3
Drawing teacher	..	..	..	..	..	..	0	1	2	..	..	..	..	3	3
Music teacher	..	..	..	..	..	..	0	5	2	5	3	1	1	17	17
Sewing teacher	..	..	..	..	..	..	0	..	..	2	..	..	..	2	2
Pub. Spk. teacher	..	..	..	..	..	..	0	..	..	..	..	1	..	1	1
Kindergartner	..	..	..	..	..	..	0	..	1	..	1	..	..	2	2
Missionary	..	..	..	..	..	..	0	..	..	..	1	..	..	1	1
Deaconess	..	..	..	..	..	..	0	..	..	..	..	1	..	1	1
Social Workers	..	..	..	..	..	..	0	..	..	..	..	2	..	2	2
Reporter	..	..	..	..	..	..	0	..	..	..	1	..	..	1	1
Author	..	..	..	..	..	..	0	..	1	..	..	..	..	1	1
Poet	..	..	..	..	..	..	0	1	..	..	..	..	..	1	1
Librarian	..	..	..	..	..	..	0	..	1	3	..	..	1	5	5
Telegrapher	..	..	..	..	..	..	0	1	..	..	..	..	..	1	1
Cartoonist	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Magazine Illustrator	..	..	..	..	..	..	0	..	..	1	..	..	..	1	1
Artist	..	..	..	..	..	..	0	..	..	2	..	..	..	2	2
Farmer	5	3	2	1	3	2	16	2	2	..	..	..	..	4	20
Ranchman	2	..	..	..	..	..	2	..	..	..	..	..	..	0	2
Cowboy	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Printer	..	2	..	..	..	..	2	..	..	..	..	..	..	0	2
Concert Pianist	..	..	..	..	..	..	0	..	1	..	..	..	..	1	1
Violinist	..	1	..	1	..	..	2	..	..	..	..	..	..	0	2
Miner	2	..	..	..	..	..	2	..	..	..	..	..	..	0	2
Bus Driver	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Ballplayer	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Trapper	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Water-Boy	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Sailor	1	..	..	..	..	..	1	..	..	..	..	..	..	0	1
Navigator	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Join Navy	..	1	..	..	..	..	1	..	..	..	..	..	..	0	1
Forester	..	..	..	..	1	1	2	..	..	..	..	..	..	0	2
Landscape Gardener	..	..	..	..	..	..	0	..	..	..	1	..	..	1	1
Postal Clerk	..	..	..	..	..	..	0	..	..	..	..	1	..	1	1
Housekeeper	..	..	..	..	..	..	0	1	..	..	..	..	..	1	1
Total	81	64	50	34	28	14	271	86	68	74	68	40	32	368	639

Another question asked: "What do you expect to make your life work?" From data compiled on the answers to this question on two former occasions, the writer drew the following conclusions:

(1) "Pupil interests in this group of approximately three hundred pupils appear to have been lacking decidedly in permanence."

(2) "Advice given to pupils on March 23, 1916, for election on the basis of their then supposed occupational interests would have been misplaced in about four out of five cases for boys and in at least one out of two cases for girls."

With these limitations in mind, we submit the following table of occupational choices as expressed by the six hundred thirty-nine pupils of this study, on March 20, 1918. The table is self-explanatory with the exception that an attempt was made to group some of these occupations of a similar nature together.

According to our classification, 70 different occupations were named. Some of these might be grouped together but they were not so classed by the pupils. The very wide range of occupations named by seventh graders is noticeable. As has been true in each of the other studies, a larger per cent of the boys were undecided than of the girls. In this case 119 out of 271 boys had failed to make a choice while only 94 out of 368 girls expressed themselves as uncertain. Another outstanding feature of the choice of the boys is the wide distribution. Only three occupations—engineering, electrical engineering and farming had as many as ten choices and these had respectively, 32, 22, and 15 choices each. On the other hand the girls seemed to concentrate on a few occupations. This was also characteristic of the two earlier studies. "Teaching" was the choice of 101, while a total of 139 chose stenography, 31 nursing, and thirteen bookkeeping. The high ranking of stenography contrasts with the earlier studies and is probably due to two facts: (1) Some of the graduates from this course had gone to Washington at good salaries and (2) the need for government stenographers had been greatly emphasized in the community.

The often decried tendency of pupils to be attracted to the profession failed to materialize. Only four professions were mentioned—physician, dentist, lawyer, and architect and the total number of choices was fifteen. In a community in which mining stands out as the one industry, only two boys named it as an occupation and that despite the fact that high wages are paid. A few of the unusual choices were cowboy, trapper, poet, ranchman, deaconess, bus-driver, ball-player, and water-boy. Clerking appealed to two boys and three girls. Apparently, there is a wide range of vocational interests to deal with and many pupils have interests which have not yet become even temporarily fixed.

Why do pupils choose the occupation which they choose? The following are some of the reasons given by pupils from different classes:

Seventh Grade Boys.

A number of boys chose mechanic, engineer, farmer, lawyer, and brakeman because they thought they would "like the work."

Electrician—"After a while lots of things will run by electricity."
Ball-player—"You do not have to work so hard."
Trapper—"You get more money and it's sport."
Ranchman—"I like to herd cattle." (He lives in town and has always lived in town.)
Sailor—"I like to travel."
Physician—"After the war they will need more doctors."
Civil Engineer—"I like to be out and see the country."
Bookkeeper or Stenographer—"I'm not able to do other work." (A cripple.)
Ranchman—"You have lots of fun."
Engineer—"Good money and easy."
Engineer—"I like to work around engines."
Business—"Because it's easier."
Engineer—"Father is one."
Mechanic—"Because you earn a lot."
Miner—"My father is one and he got along all right."
Mechanic—"It is good pay and you could be useful in many ways if war were declared."
Machinist—"My father is a machinist."
Office-work—"It needs a good educated man."
Farmer—"To raise food for the U. S."
Water-boy—"Because it is easy."
Office-boy—"It is better than pick and shovel."
Cow-boy—"I like to work with horses."
Office-work—"Easier, not heavy."
Lawyer—"There are short hours and good pay."
Business—"You earn more in it."
Surveyor—"Good pay and you can camp out in the night."

Seventh Grade Girls.

Office-work—"It isn't hard work."
Teacher—"Higher wages."
Bookkeeper—"You can make a better living."
Teacher—"I like school."
Stenographer—"I like arithmetic and a stenographer is likely to use arithmetic."
Nurse—"It would be nice."
Bookkeeper—"I like arithmetic."
Architect—"I think I would like it."
Stenographer—"It looks easy."
Stenographer—"Easy work and good pay."
Teacher—"I like to have a more quiet time, less work."
Housework—"I am better off that way."
Teacher—"Earn your own living and be independent."
Clerk—"I worked in a store before."
Poet—"I like it better than anything else."
Bookkeeper—"Because we have a store."
Telegrapher—"More money in it."
Teacher—"I will have a good education."
Nurse—"I like to care for people."
Teacher—"It is better than other work."

Eighth Grade Boys.

Printer—"Good money."
Mechanic—"Good pay."
Machinist—"Good money."
Navy—"Learn a trade there."
Electrician—"I naturally like it."
Cartoonist—"I like to travel and like to draw."
Engineer—"Good job."
Mining Engineer—"It comes most natural."
Conductor—"More pay and you could see more towns."
Farmer—"I like the country better than the city."
Clerk—"It isn't cold work in the winter."
Navigator—"I love the sea."
Doctor or Lawyer—"I'd like to be one of them."
Farmer—"Make a good living and never starve."
Violinist—"On account of my hand."
Engineer—"You can get to a higher job afterwards."
Engineer—"I have always thought of that."
Store-keeper—"I am experienced at it."
Auto-mechanic—"Because it is a growing industry."
Farmer—"I like to raise things."

Eighth Grade Girls.

Clerk—"It is easiest."
Kindergartner—"I love teaching and little children."
Farmer—"You raise your own food and for others also."
Librarian—"I am interested in that work."
Nurse—"I like to take care of sick people."
Gym Teacher—"I like gym."
Teacher—"Good money."
Teacher—"I think it would be fun."
Author—"I love to write stories."
Drawing Teacher—"Drawing is my talent."
Clerk—"Because I haven't any chance to become anything else."
Stenographer—"To earn more money."
Bookkeeper—"It's interesting."
Teacher or Bookkeeper—"It is better than to keep house."

Ninth Grade Boys.

Engineer—"I like the trade."
Physician—"I am interested in that kind of work."
Mechanic—"Good pay."
Engineer—"Just for the good job and good pay."
Salesman—"I am best adapted to it on account of physical disability."
Railroad man—"There is a good chance for promotion."
E. Engineer—"I think there will be a demand for them."
Physician—"I'd like that kind of work."
Manager of store—"I am learning the business."
Locomotive Engineer—"It is what my father and brothers do."

Ninth Grade Girls.

Magazine Illustrator—"I like that work."
Artist—"I am interested in it."
Gym Teacher—"I like sports."
Stenographer—"You learn about the business world."
Librarian—"I am interested in books and authors."
Stenographer—"Ill be sure to like that sort of work."
Teacher or *Principal*—"Because it's easy."
Nurse—"You can always find employment."
Nurse—"It is of great value to girls."
Teacher—"My parents want me to."
Red Cross Nurse—"It is my ambition."
Dressmaker—"I like sewing."

Tenth Grade Boys.

Furniture Dealer—"Clean work."
Engineer—"I like an outdoor life."
Druggist—"It is a good trade to take up."
Engineer—"I seem best adapted to it."
E. Engineer—"Most money, easier work."
Farmer—"I like outdoor life."
Mechanic or Dentist—"If you are a good one you'll make good money."
Engineer—"Instead of being hard it is almost a pleasure."
Civil Engineer—"U. S. will need engineers after the war."

Tenth Grade Girls.

Stenographer—"Requires less training."
Stenographer—"I like to do that better than anything else."
Kindergartner—"I think I could make good because I like children and have patience."
Stenographer—"Because the country needs them."
Stenographer—"It is clean and there is a chance for further advancement."
Nurse—"I would like to take care of the sick and helpless."
Teacher—"I like the country and teaching is the only suitable work for a girl in the country."
Stenographer—"You get better wages and can get better things."
Stenographer—"Because my parents and I like it."

Eleventh Grade Boys.

Farmer—"The best chances are offered in farming."
Forester—"I like the woods and spend most of my time there."
Farmer—"The farmer is the only independent man living."
Sailor—"I like the life on the sea."
Mechanic—"I have worked around machines."
Lawyer—"I like what I know about the profession."
E. Engineer—"Good vocation and wide field for it."
E. Engineer—"Large field and a good course can be obtained at home."
E. Engineer—"Most promising vocation."
E. Engineer—"There will be a great demand for them after the war."

Eleventh Grade Girls.

H. S. Teacher—"Has always been my one desire."
Teacher—"It is respectable and has enough salary."
Stenographer—"Good pay and generally good hours."
Stenographer—"Good opportunity for women."
Teacher—"Have always wanted to become a teacher."
Postal Clerk—"It appeals to me most."
Deaconess—"I like the religious life."
Stenographer—"You are not required to go away from home to school after graduating here."

Twelfth Grade Boys.

Auto-mechanic—"I think in the future everything will be driven by gasoline and electricity."

Twelfth Grade Girls.

Stenographer—"I like stenography better than any other subjects in high school."

The Questionnaire.

1. Name .....
2. What subject that you have had in High School or 7th or 8th Grades, do you most prefer?—.....
3. What is your second choice?.....
4. What subject did you most dislike?.....
5. If you could drop one of your present subjects, which would you drop?.....
6. Why? .....
7. Do you prefer a man teacher or a woman teacher?.....
8. Why? .....
9. Do you work at home?.....
   (a) On nights and mornings?.....
   How much time each day?.....
   (b) On Saturday? .....
   How much time?.....
10. Do you work away from home during the school year?..
11. If so, how much do you usually earn per week?.....
12. If not, would you like to work?.....
   (a) Before and after school?.....
   (b) On Saturday? .....
13. What kind of work would you be willing to do?.....
14. What do you expect to make your lifework?.....
   Why? .....
15. Do you want to go to College and University?.....
16. What course do you expect to take?.....
17. What subjects not given here would you like to take?...
18. What magazines do you read regularly?.....
19. What books that you have read do you like best?.....
20. Do you read daily papers?.....
21. What parts do you read?.....
22. How often do you go to moving picture shows?.....
23. What language is spoken in your home?.....

Even these statements when abstracted from the other information relative to the pupil, speak volumes. When taken with the other data and with the knowledge of the home, and social conditions of the individual, they furnish an insight that enables an advisor to direct the thinking of the pupil either toward his chosen goal or into some other more congenial field. Subject preferences, types and number of books read, magazines and daily paper reading, attendance on movies, desire to attend college, temporary employment outside of school hours and during vacations—all help to properly classify the pupil and above all else show where sympathy is well placed and where it is misplaced. When this information has become a part of the intellectual equipment of the counsellor, he is ready to begin systematic guidance. In the meantime, he must of necessity use whatever information he is able to secure.

In closing, it should be said that we are not minimizing the need for ultra-school information on the part of the counsellor, but are maintaining that one of the oft-neglected phases of guidance is the individual history of the person to be guided.

Projects for the School Bazaar—The Sewing Cabinet

Bonnie E. Snow and Hugo B. Froehlich

ANY project which, when completed, meets an enthusiastic reception in the home circle, and at the same time fulfills the educational requirements of the grade in which it is made, may be accepted as highly satisfactory. The sewing cabinet, herewith described, is such a project. Every mother's son who has carried home this achievement of his efforts in combined manual training and art has won the chevron of family approval and admiration. His sisters and his cousins and his aunts have besought him to duplicate his project. Thus in numerous instances the sewing cabinet has become a means of income. In the school bazaar these cabinets sell for five dollars, with no fittings. When to the empty framework are added some of the indispensable implements of needlecraft, such as scissors, spools of silk and cotton, tapes and tape measures, pins and needles, balls of darning cotton, an emery cushion, etc., etc., the price goes up accordingly. There has never been, yet, in the school bazaar a single sewing cabinet left over, to be "auctioned off," or to be returned to the individual or the class that produced it. On the contrary, orders for "more" have taxed the capacity of the school shop and the limits of time accorded to such work. The sewing cabinet surely functions in the home, because it supplies a need of practical life. Its decorative panels add a touch of color to living room, sewing room or bedroom, and give to the eye that is surfeited with the commonplace, a distinct sensation of pleasure.

Fig. 1.

Fig. 2.

Fig. 1 shows the cabinet closed, as it appears as an article of furniture. Its framework is black, the decorative panels appearing in any color scheme desired. In the model which is here illustrated, a background of warm, gray orange cardboard was used for the panels. The prevailing scheme of the decoration was orange and blue, enlivened by touches of black and white. The color scheme can, of course, be varied to harmonize with the prevailing tones of any room in which the cabinet is to be used.

Fig. 2 shows the cabinet opened and in use. A cloth pocket or work-bag of decorative cretonne has been tacked to the left side of the framework. If preferred, a block-printed or stencilled fabric, prepared by the student, could easily be substituted for the cretonne. The convenient shelf or table is securely fastened in horizontal position, and all the fittings are in place. On the left are spools of cotton in black, white and other neutral colors. On the right are spools of brightly colored silks, skeins of embroidery cottons, an emery "strawberry," a string of bone rings, etc. Hooks for hanging these and other accessories may be screwed into the framework wherever desired. A brass drawer-pull attached to the top makes a convenient handle by means of which the cabinet may be carried easily from place to place. A staple and hook are fastened in the outside of the framework, midway between the top and the middle, so that the sides of the cabinet may be securely fastened together when closed, as shown in Fig. 1.

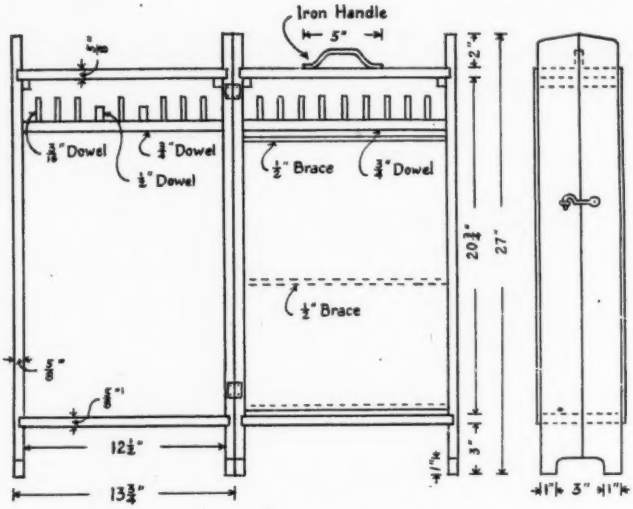


Fig. 3 · Working Drawing of Sewing Cabinet Front and Side Views

Fig. 3 is a working drawing, showing the front and side views of the cabinet. Stock for the framework is five-eighths inch whitewood. The shelf, or table, which is shown in Fig. 2 almost at its edge view, acts at once as a brace to the framework when open, and as a most convenient work-table. It is held firmly in a horizontal position by a hook and staple. In size the shelf measures 12 by 15 inches.

Five inches from the top of each side of the frame are nailed lengths of three-fourths inch dowels which support other dowels (measuring respectively three-sixteenths and one-half inches) that serve as spool-pins, holders for thimbles, etc. (See Fig. 2.)

Various modes of finishing are used in completing the cabinet. Sometimes a Flemish oak stain is applied, and the surface afterwards waxed. Or, the framework may be painted in black, white or any

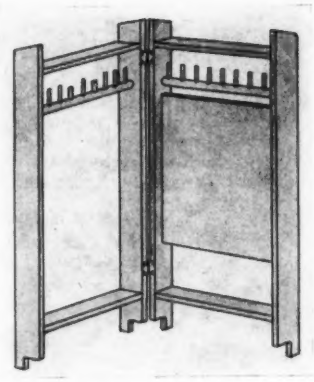


Fig. 4. The Cabinet as Finished in the Manual Training Shop.

color desired. In the model illustrated, a finish of black enamel was used. Two coats were applied, and when the last coat was thoroly dry a coat of varnish was added. The inside of the cabinet was not painted. It was finished with two coats of varnish applied directly to the wood.

Fig. 4 shows the framework of the cabinet as finished in the manual training shop.

The decorative side of the project now engrosses our attention. Cardboards at least ten-ply in thickness must be cut to fit the frame work. When decorated with a design painted in show card colors, they are to be tacked to the frame, their edges being finally covered with half-inch molding. If the color of the cardboard is not satisfactory as a background, heavy paper of the desired tone may be pasted over the entire surface.

In planning the decoration, a panel of manila paper is first cut, its size and proportions indicating the area to be decorated. In the model illustrated the size of this panel was 7 x 14 inches. The panel is next folded on its long diameter. A marginal band

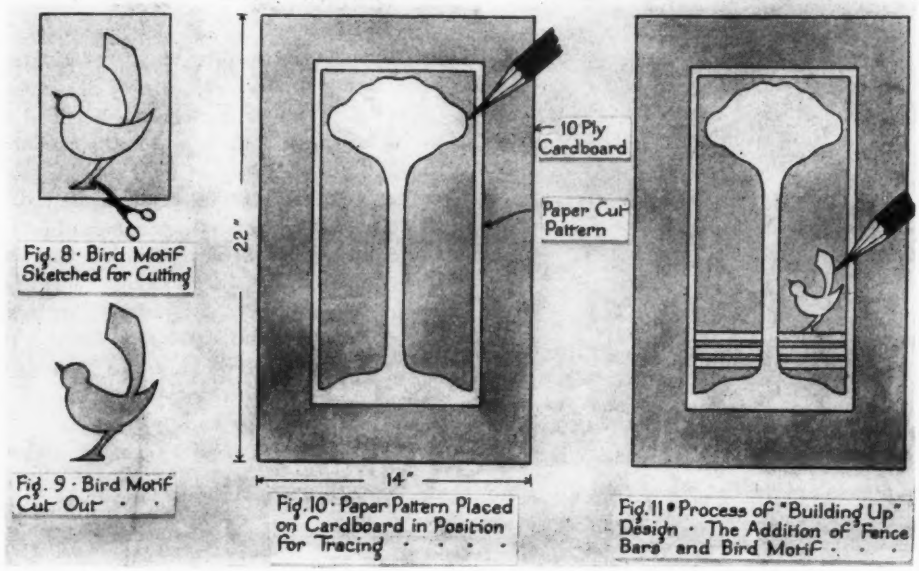


Fig. 8 · Bird Motif Sketched for Cutting

Fig. 9 · Bird Motif Cut Out

Fig. 10 · Paper Pattern Placed on Cardboard in Position for Tracing

Fig. 11 · Process of "Building Up" Design · The Addition of "Fence Bars" and Bird Motif

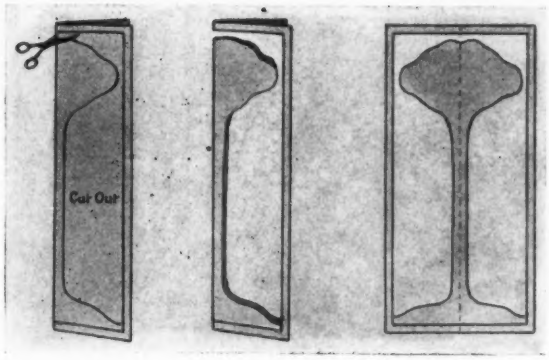


Fig. 5. Fig. 6. Fig. 7.
Showing development of 7" x 14" Panel with Tree Design Cut Out.

somewhat less than a half-inch in width is then drawn on three sides of the fold. Half of the desired design is then sketched in outline on the folded paper (Fig. 5). The design is then cut out, leaving the folded paper as shown in Fig. 6. In Fig. 7 we see the bisymmetric unit that resulted when the panel was opened.

Other shapes besides the tree shape were necessary to make the design interesting. Fig. 8 shows a sketch of a highly conventionalized bird, beautiful because of its related line system, rather than because of its fidelity to nature. When this shape was cut from paper, Fig. 9 resulted.

As our proposed design is planned on a bisymmetric basis, whatever is added on one side must be balanced on the other. Let us first secure our axis on which all other shapes are balanced. We use the panel shown in Fig. 7 as a pattern for tracing the design upon the cardboard. The panel is held in place by pins or thumbtacks or pins, and the tracing is done with a sharp pointed, soft lead pencil. Fig. 10 shows the process. Narrow strips of manila paper are balanced on either side of the tree shape, to suggest fence-bars upon which the bird shapes are to rest. These additions of various shapes are known as "building up" the design. Fig. 12 shows the tracing completed, and a few additional shapes added to the large shape at the top.

The question of coloring the design is always most important. A good teacher will require her pupils to work out the designs in color before beginning to apply them to the cardboard panels of the cabinet. Brilliant effects are always secured by starting with a foundation of black and white, and then adding small areas of intense color. These colors may show complementary or analogous harmonies, or indeed any other scheme that may be developed from the color chart. In our model the painting was done with show-card colors (opaque water colors).

Sometimes these decorative panels are carried out in colored papers. This is highly satisfactory in its decorative aspect, but involves very careful cutting and pasting of all the parts, so that edges and points do not curl. Show-card colors, when well laid on, are as flat in effect as papers, altho their range of color is neither as extended nor as brilliant as we can find in papers.

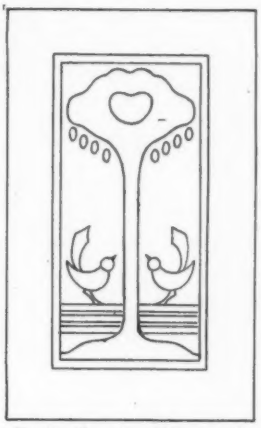


Fig. 12. Completed Tracing of the "Built Up" Design

Fig. 13. The Shapes Filled in with Show Card Colors

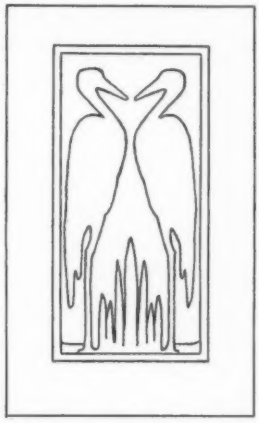


Fig. 14. Completed Tracing of Paper Cut Design

Fig. 15. The Shapes Filled in with Show Card Colors

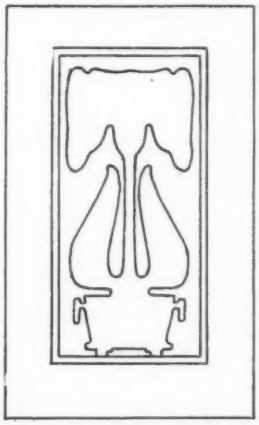


Fig. 16. Completed Tracing of Paper Cut Design

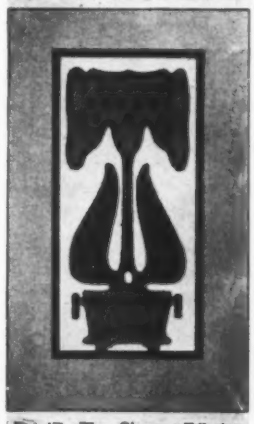


Fig. 17. The Shapes Filled in with Show Card Colors

Fig. 14 shows another design developed by the method just described. Fig. 15 suggests a treatment in strong contrast of color values. Fig. 16 offers still another suggestion. Here a few simple shapes seem to demand certain enrichment. This may be added

Pierrot.

Dinah.

Nancy

Three Dowel Dolls made for the School Bazaar. See April Magazine, Pages 149–151.

directly to the painted shapes, when the undercoat is dry. Fig. 17 shows one way of doing this.

The sewing cabinet is usually worked out in high school classes, altho under advantageous circumstances it has been successfully accomplished in eighth grades.

METALLIC BRONZES: THEIR USE

Ralph G. Waring

OF late years, metallic bronzes of a wide range of color have appreciably replaced some of the older and more expensive gold leaf methods of decoration since some very fine artistic and durable effects are possible when care is taken in the choice and use of suitable materials.

Bronzes are not made from gold as the name might suggest, but are chemical forms of a number of inferior metals in combination; and of these products the best and finest is that grade known as "French Flake." This form of the bronze is least susceptible to chemical change either from the bronzing or from atmospheric conditions.

By way of specific treatment let us suppose that we are to finish a wooden picture frame or electric lamp base, both with relief ornament. Assuming of course that the wood is adequately sanded and ready for finishing, it will first be necessary to use one or more *ground coats* in order to bring all surfaces to a true level. And since this picture frame is to be finished in rose gold, the under coat should be tinted with the japan colors, French ochre and chrome yellow (orange shade) to approximately match the finished color. For this work any good enamel undercoating may be used. The material is exceptionally fine in texture and sands to a perfect surface after drying 48 hours. In case it is not practical to obtain any prepared undercoating it may be made from:

White lead in oil	5 parts.
White zinc in oil	3 parts.
Silex	2 parts.
Rubbing varnish	3 parts.
Turps	1 part.
Drier	1 part.

To this add the necessary tinting colors, it being advisable for this class of work to use tube colors ground in japan. Use sparingly; since the colors are very concentrated and a little will produce a strong shade. The purchase of colors in tubes with the sealing caps will prove an economical practice.

Between the first and second undercoats it is advisable to do all *putty work* in order that the oil from this medium may not be absorbed by the raw wood. This putty should be made from white lead, 2 parts; whiting, one part; dry tinting colors to match.

Add enough rubbing varnish while working the putty to make a very stiff dough after which work in a few drops of raw oil until it works stiffly but freely under the knife. Use this putty to level up all holes, scratches, etc., and when hard and dry, sand smooth with 00 paper.

Follow the putty with a second coat of undercoater, being careful to use a soft brush like a fitch flowing brush. If necessary use enough turps to make this coat of primer flow nicely but still be heavy bodied. When this is thoroly hardened, sand smooth and dust off.

It is best at this point to give either a coat of good varnish such as Pratt & Lambert No. 61, let dry, rub smooth with felt, water and FF pumice stone; or else use the best quality gold size japan which when dry should be rubbed with a stiff rubbing brush enough to remove the gloss.

In choosing a bronzing liquid for either gold or metallic flake bronze it is absolutely essential that the size be neutral in its chemical condition, that is it should have no corroding action on either the leaf or flake. As far as my researches of a number of years experience, the pale gold size japan of Pratt & Lambert is the only one wholly satisfactory since it neither attacks the metal nor does it crack or silk after years of use.

The first application of the bronze should be made as follows: Use enough gold size to complete the work adding sufficient gold bronze to give a good body. Brush on carefully and quickly with the tip of a camel hair brush, and be careful to get on enough material but avoid any surplus which might cause tears or sags. Brush as little as possible. From the unfinished to the completed work should constitute the line of movement. Before starting this work stop and plan out the brushing in such a manner as to avoid doing any part twice or getting the hand on finished portions. Remember the rule: "Start with that which you see the least, end with that which you see the most."

This first bronze coat should dry over night if possible, altho it may be recoated safely in five hours in a warm room with plenty of air. The second coat of japan should be clear, containing no bronze and as soon as it is set enough to feel a bit tacky or sticky it should be dusted with the bronze powder in a cheese cloth bag. Do not allow the bag to touch the japan but simply jar the hand enough to sift on a heavy coat of bronze. Allow to dry thoroly and then rub carefully with a wad of cotton or with a clean black china bristle brush to remove loose excess bronze. If desired, the work may be left at this point, but if necessary for further treatment, go over the bronze with a coat of japan reduced one-half with turpentine. This will tone down the brightness of the flake and protect it sufficiently to permit subsequent treatment with flat varnish, starch or other materials.

If a soft, perfectly-flat treatment is desired, as in antique gold, make up a *starch coat* by rubbing up a tablespoonful of laundry starch and cold water, adding boiling water to dissolve and thin to the consistency of cream. When the coat of reduced japan is dried thoroly hard, it is necessary then to brush on the starch coat, smoothly, carefully and as thin as may be. This when dry, will give a soft, flat finish. In case the frame or lamp becomes soiled from handling, the finish may be readily brightened up by washing off the starch coat with a sponge and warm water and recoating.

Oftentimes it is desirable to produce antique metal effects as verde copper, dull rose gold, green gold, lemon gold, yellow gold, copper bronze, silver bronze, etc., in which case the undercoats must be tinted to match the shade of bronze employed.

Relief work is often brightened by using a pencil line of cream, tan, blue, red, green, etc., at the base of the relief work. This is done by using a soft sable pencil brush or lining saber, using colors ground in japan and reduced quite thin with turpentine to give simply a suggestion of color. Care must be exercised to choose rather weak, soft, harmonious contracts rather than bold color effects which soon prove tiresome. After penciling these colors in, the surplus is wiped off with a cloth to produce the necessary highlighting, leaving but a suggestion of color, which the cloth did not readily wipe off. Following the drying of these colors use either the starch or a flat varnish as desired.

The following suggestions as to color combinations may be helpful in gaining desired effects:

For Brass Tablets (imitation materials).

1. White undercoater tinted with French ochre, orange chrome yellow.
2. Coat of gold size and flake.
3. Second coat of size, dust on flake.
4. Size coat of japan.
5. Color coat of verde green or copper green, rubbed to highlight.
6. Inside work starch coat; outside use varnish.

For Gold Frames, Etc.

1. Tinted undercoat.
2. Coat of size, and lemon, yellow, rose or green, gold flake.
3. Second coat of size, dust on flake.
4. Size coat of japan.
5. Color coat of cream, tan, rose, blue, etc., rubbed to highlight.
6. Starch coat or dull varnish.

For Lamps, Etc.

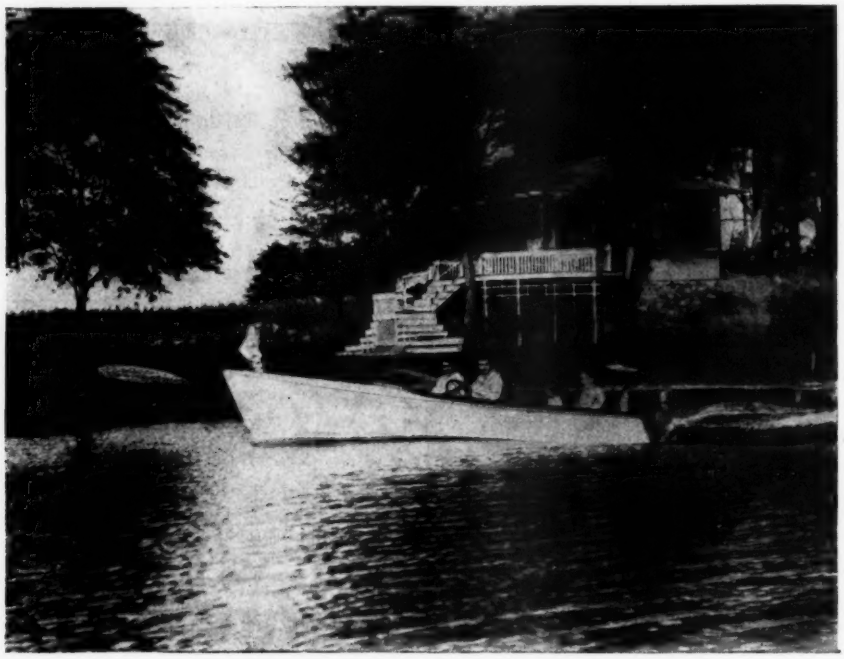
1. Tinted undercoat.
2. Coat of size, gold flakes, copper, silver, green, etc.
3. Second coat of size, dust on flake.
4. Size coat of japan.
5. Color coat of cream, tan, green, brown, etc., rubbed to highlight.
6. Starch coat or dull varnish.

ALL the furniture and ornament which goes to make up the complete unit of art, a properly ornamented dwelling, is in some degree or other beset with the difficulties which hamper nowadays the satisfactory accomplishment of good and beautiful buildings. The decorative painter, the mosaicist, the window artist, the cabinet-maker, the paperhanging-maker, the potter, the weaver, all these have to fight with the traditional tendency of the epoch in their attempt to produce beauty, rather than marketable finery, to put artistic finish on their work rather than trade finish.—*Wm. Morris.*

THE SUMMER COTTAGE AS A BUSINESS PROPOSITION

Fred S. Huff, Michigan State Normal School, Kalamazoo

TO many teachers the problem of what to do with spare time during vacations becomes a vital one, especially so now in view of increased living expenses as compared to raise in salary. Many of the younger and unmarried men may go into industry, but there still remains a large number of heads of families who would like some answer to this problem. It is to these and especially the manual training teacher that this article may appeal, and I will endeavor to explain with some degree of detail the problems involved.



A COTTAGE IN NORTHERN MICHIGAN.

Knowing from long experience the size of the average teacher's pocketbook let it be understood from the outset the amount of actual cash involved may be small and the chances for a good time and comparatively large remuneration are good.

Before going farther I would like to say a word to those of you who may have an automobile in mind. For a person in moderate circumstances an automobile as an investment (unless purely commercial) is a delusion and a snare. The only return is your own personal enjoyment tempered by the thought of what it is costing and the other fellow's dust. You will be shocked to see how soon you may wear out your friends' (or relatives') hospitality unless you keep the gasoline flowing. Many are the autoists with no place to go. On the other hand if you own a place at the lake you may enjoy unalloyed pleasure. You and your friends who may own machines can combine forces and in that way share the pleasures of automobiling, fishing, boating, swimming, etc.

If you do not care to occupy your cottage all the vacation it may be rented to friends or responsible people at a good rate. In place of depreciation you will have increased valuation. You and your family will be brown as Indians, physically fit and better able to stand the next year's work. Many times during the winter months you will get out the kodak album and live again the happiest days of your life.

The first and most important problem to consider is the location for the cottage, especially if you expect to sell it. It should be desirable, that is, if possible on a lake or stream. Let us suppose it is on some lake. Is that lake accessible by railroad or is it hard to get to? Nearest large city? Possible annoyance by excursion crowds, nearest source of supply for both building supplies and groceries should be noted. If building material is hard to get your lake will develop slowly and nine times out of ten it is by development that properties rise in value. Next in order is the site. If the lot is hard to get to your chances of selling will be lessened. You may have no machine but your prospective buyer may have one and he will be loath to leave his car on one side of a lake and live on another. How about the title? Can you get a warranty deed with an abstract of title or only the farmer's quit claim? Many fine points of land were islands at the time of the original survey and have become land-tied. In that case the present

claimant can only give you a quit claim unless he has secured title to it. Many islands are really owned by some railroad as a result of an old land grant. Your natural tendency will be to look into the fishing, bathing, boating, etc. But where will you get groceries, milk, eggs, meat, ice and mail? Tastes differ, some people like solitude, others prefer lots of excitement. For investment choose a happy medium. If you do pick a lonesome spot you will solve some of the following problems—perhaps.

Neighbors may make or mar your pleasure. A good neighbor is to be highly prized. It helps you to be one yourelf. See to it you do not have to trespass to get from the highway to your own premises with leeway to pass the other fellow. Remember the road you accept when you buy is the road you get. If it has gates the gates remain. Opening several gates and then going back to close them gets monotonous. Settle the line fence for all time and at least put down iron stakes on all corners. Some farmers use the lake front for pasture spring and fall. Hogs, sheep and cattle can ruin the best lawn or garden in a few minutes.

Your water supply is of paramount importance. Protect it and your neighbor's. Sewage and garbage should not, and in many states may not, be thrown into the lake. Look into the sewage problem and solve it right.

Do not look at things too much as they are when you find them, but view them in the light of their possibilities. The rougher the place the cheaper it is and the more chance for improvement which stands for and means profit.

Certain natural disadvantages should be avoided. A shallow cove will always be shallow. Bear in mind that the average lake will lower a foot in depth from June to August. That means that some day in the future when you get your launch (and you surely will) you will be in trouble. You may dig a channel and the next day it will fill in. Your boat house will be the receptacle for leaves and mud that will float in and you will not only be in trouble, but you will stay in trouble, so avoid them in the first place.

Rushes on a sand or marl bottom may be pulled and will die out. You will be surprised at the change in looks after a couple hours of work. Pond lilies and cat tails are a different proposition and you will do well to avoid them.

Crooked trees may be cut down, hollows filled and knolls leveled at will, but a dense woods at your back means mosquitoes. Get where the wind may blow across you and you are safe.

A glance at your shore front will tell you about ice conditions in winter. If it breaks away sharply and shows where the pressure has pushed the earth up, do not drive stakes or even piles for a boat house and expect them to stay.

Study the outlook. He who faces the West gets the bright afternoon sun, but enjoys the sunsets. He who faces East loses the sunsets, but gets the moonrise. He who faces South gets bright water and he who faces the North has dull water, but bright clouds. Blessed is the man on a small island if he has a good title, a lot on mainland for his auto and some one else to deliver his milk.

Where conditions are right buy as much land as possible. If you economize too much some one else may build a boat house in front of you and cut off your view. Your house will not increase much in value after the first year, but your land will. The very fact you have built increases the value of the surrounding property.

No doubt you will say this buying sounds like spending money and we agreed at the beginning not to do very much of that. Get a land contract of course. A small payment down and so much a year, or better yet, any or all of the balance at any time on or before, say five years from date. The smaller the initial payment the more you have left for lumber. You can tie up from one to ten hundred dollars' worth of lake front valued in its rough state for an initial expense of twenty-five or fifty dollars. Of course you will have to pay interest on the balance, but it will not amount to exceed five dollars a month. Your taxes will be very light on unimproved lake lots and will never exceed one per cent.

The next thing is to put up your cottage and as the bare lumber and hardware bill of such a structure may be made as large or small as you please, do your planning early; that is part of the fun.

If you have bought your lot any lumber dealer will be glad to furnish material and take a mortgage as security. If you are going to build any farmer will be glad to sell on a contract so you may take your choice. Each man figures you can't run away with land, so he can't lose. But that means to go in debt you say. For the average teacher it is the best thing he can do for himself. If you use judgment and tie yourself to the steady payment of some fixed sum, you will save it where you never would do so in any other way. To save and enjoy the fruits at the same time is doubly beneficial. The increased valuation of the land is based on the total value and not simply on the amount paid in, and you get all of it. To those of you who say I cannot pare my present expenditures enough to pay out in five years, remember you have five years of chances to sell off lots with or without improvements or at the end of that time get an extension on the contract. Your five summers' work will do wonders for any piece of property. Some one else's land is one thing, but yours is an entirely different matter. You will know and love every tree and flower. You will work early and late and enjoy every minute of it, and that is what you need to get out of your rut.

For the sake of the fellow who must have a concrete example shown him before he passes final judgment I submit the following: Two teachers by simply

applying the line of thought brought out in this article selected a small but desirable point of land projecting into one of Michigan's fine inland lakes. They bought a sixty-day option on it for only ten dollars. Knowing from experience the possibilities ahead they did not hesitate to use their own cottages as collateral and borrowed the money to pay the farmer the full amount in cash. These two teachers put in not to exceed a week of pleasant work cutting down undesirable trees and the lower branches of the others, burning brush, staking out lots, and one day's work with a team fixing up a road across a low spot. Prices of lots were determined and a substantial discount offered to a prospective buyer if he would take two lots and build a desirable type of cottage at once. Restrictions which had been determined upon as essential to the future being of the project were imposed. These included the front building line, fixed places at the rear for garages and boat houses, and toilets enclosed within the cottage that would comply with the requirements of the state board of health. No difficulty was experienced. The money derived from the sale of lots has been turned in on the mortgage, paid interest, taxes and any expenses such as surveying and the drawing up of papers. These two men have cleared over one thousand dollars apiece for an initial expense of five each. No attempt was made to squeeze every last dollar of profit or value out of each lot, and as the land has increased rapidly in value the present owners are satisfied.

In another instance a manual training teacher having only $250 to start with bought a double lot on a contract. By careful planning and doing the major part of the work himself he put up a cottage. The most of the furniture came from the house in town and his wife was pleased to see it go. Later in the summer the same farmer was only too glad to sell him an old but serviceable launch and add its price to the contract. The launch was fixed up by putting on new decks, repainted and varnished. During the following winter the engine was overhauled. The next summer the whole outfit with the exception of one lot was sold for cash. Enough money was cleared to erect an equally good cottage, furnish it, pay for the lot with enough left over to buy a Ford.

After three seasons' use the Ford was sold for half price, but the cottage and lot are worth in the neighborhood of $1,200.

All this may sound too good to be true, but these are actual facts and names and places may be secured.

Not all of you may be so fortunate as to live in a lake district, and for you I suggest come to Michigan to spend your summers. There are hundreds of fine lakes besides the shore lines of the big lakes. In fact the whole state is one vast summer resort. I know of many manual training teachers from outside the state who spend their vacations here, but there is plenty of room for more. At some of the lakes there are small colonies and not all of these teachers are attempting to make money out of their homes, but are in it simply for their own and families' health.

The writer is frank in saying he is in it for all there is in it, but manages to remain healthy at the same time.

Come on and join the crowd. If you have to, rent your flat or house furnished this next summer, but by all means obey that impulse and get out of town.

COTTAGE BUILT BY A MANUAL TRAINING TEACHER AT A NORTHERN LAKE.

PLACE OF ART IN VOCATIONAL EDUCATION

Arthur F. Payne, Associate Superintendent and Director
of Vocational Education, Johnston, Pa.

THE National Education Association and the United States Bureau of Education have defined vocational education as "Any form of education, whether given in a school or elsewhere, the purpose of which is to fit an individual to pursue effectively a recognized, profitable employment, whether pursued for wages or otherwise." We must now broaden the very narrow conception of Vocational Education that is at present firmly fixed in the minds of many educators. This narrow conception confines vocational education to the turning out of machinists, carpenters, blacksmiths, pattern-makers and a few other similar trades. If we accept, as we must, the broader conception and definition, we shall have little difficulty in seeing that art will have a very important place in vocational education.

Advocates of art have a very great responsibility in re-evaluating, in defining and adjusting the subject, so that it will fit into and become a valuable and significant part of the present and future schemes for vocational education. We must get a larger vision of art, a broader idea of its purpose, a willingness to adjust our methods, if it is to take its logical place in vocational education. We must realize how insignificant is the fact that there are approximately 125 distinct styles in ornament, and that no tribe of people or nation has had an entity of its own, but what has also had an art of its own, excepting only this great and wonderful country of ours. In my own mind, there is but one cause for this condition of affairs and that is the attitude of the artists and art teachers, who have emphasized pictorial art, which really is but a very small phase of art. Another mistake which is made by artists is the copying of historic art. Wherever you go, in city or country, the slums or the homes of the rich, you will find ancient Greek and Roman art, copied, distorted, misadapted and misapplied. This ornament was worked out in a splendid way by real artists for a different type of people with different ideals, different religion, different climates, to fill a need of their own, and we take that art and apply it to all sorts of materials under all sorts of conditions in a manner that is excruciating and ridiculous to any one who knows the derivation of the forms used. As an illustration of this, I have seen the wonderful Corinthian capital used as a foot support on a bootblack stand, as a candlestick, as a manicure file handle, as an ornament on the steam calliope in Forepaugh and Sells circus. One of the principal means of recognizing some of our prominent bank buildings is because they are built in imitation of that wonderful temple, the Parthenon.

Again, we have been guilty of dividing art into various units at our own sweet pleasure; for instance, we talk about the fine arts with an air that verges upon snobbery. We talk about the craft art and pictorial art and now we are beginning to talk about industrial art and vocational art and being as it seems to be the fashion, I want to go one step further and coin the name "Pedagogical Art," which is the art of the pedagogs.

If we, as teachers, expect to have this pedagogical art and pictorial art or the fine arts accepted by vocational education, we are doomed to certain disappointment. Pedagogical art has had a period of trial for a number of years, in fact since its introduction into this country by Walter Smith in the year 1870, who you will remember was imported from England to introduce art work into the schools of Boston. We must change the emphasis from the pedagogical and pictorial art, which is almost wholly thru the medium of paper and pencil to the mediums of vocations which are the tools, materials and processes used in the application of artistic goods. Again, we have made the mistake in pedagogical art of accepting the drawing, design or picture as the end. In the vocations the design or drawing is simply the means to an end, the end being the finished object carried out in the concrete material.

So that I may make this point of view perfectly clear, let us go back to the discussion of "What is Art?" Ruskin says: "Art is the expression of an emotion, need, desire or ideal." Delsarte says: "The object of art is to crystallize emotion into thought and then fix it into form." The medium is immaterial. We may use paint, pigments, pencil, color, wood, stone, clay, metal, sounds, the printed work, action, or any medium which expresses our emotion or message or ideal. The chief requirement is that we must have something to express and we must obey the fundamental laws of composition and design and the technic must be true to the medium used, whatever it may be.

Again, we must remember that before the reign of Louis Quatorze in the year 1700, there was no such distinction between the fine and craft arts. Art was alive then. We must also remember that every great art epoch has been founded on industrial arts or craftsmanship.

Walter Crane, the great English artist, says: "The true root and basis of all art lies in the handicrafts. If there is no room or chance of recognition for artistic power and feeling in design and craftsmanship; if art is not recognized in the humblest object and material and felt to be as valuable as the more highly regarded pictorial skill, then the arts cannot be in a sound condition; and if art ceases to be found among the crafts, there is a great danger that all art will vanish."

Another point that will assist us in adjusting ourselves to this broader view is the fact that all of the great artists whom we reverence were craftsmen before they were painters. For instance, Leonardo Di Vinci,

who painted the famous portarit "Mona Lisa" and that wonderful picture "The Last Supper," was a metal worker, an engraver, a bridge builder. In 1505, he invented the first successful file-cutting machine. In his day he was more famous as a maker of armor and a builder of bridges than he was as a painter; in fact, we know that he was working on the portrait of "Mona Lisa" for four years. He was too busy with other things, and just spent his spare time on this painting. Michael Angelo, before whose work we are accustomed to bow in reverence, served an apprenticeship of seven years with Ghirlandajo as a goldsmith. Michael Angelo made many designs for ornament, robes, furniture, doors, glass windows, etc. The great Titian was an armorer by trade and a very famous one. Donatello, whom we all know for his sculpture, was an armorer by trade and during his lifetime was more famous for his metal work than for his sculpture. Hans Holbein, whom we think of in connection with his wonderful portraits, spent most of his time designing and making metal work, book covers, costumes, windows and armor. Albrecht Dürer served an apprenticeship of seven years as a goldsmith at Bruges and was master goldsmith of Nuremburg at his death. Benvenuto Cellini, whose autobiography so many of us have enjoyed and whom we think of as one of the great outstanding figures of the Italian Renaissance, was a famous metal worker who learned his trade with Michael Angelo. Phidias, the Athenian Greek, whose Olympian Zeus was the most complete realization of a notable ideal, was an ivory carver and a gold worker by trade. Botticelli, of Florence, whose Temptation of Christ is in the Sistine Chapel and whose Madonnas are known to all, served a seven years' apprenticeship to a jeweler. And so we could continue all down the list of these great artists. In those great days of art all the people who made things shared in art. The things that we treasure in our museums today were made by the common people and not by any special class of people called artists.

The vocational education development presents to the real artists of this country a wonderful opportunity to make their art real, alive, vital and necessary. Our industrial system has been brought to a general dead level of efficiency in which no one can get any advantage over the other. Economists feel and are now proclaiming the fact that we have reached the limit and that the only national resource that remains undeveloped is our art, and by that they mean art in its truest sense, art in common every-day things, in articles of trade and commerce. If you will analyze the advertisements of our most modern production, the automobile, you will find in every case that the main appeal is made to the prospective purchaser on the basis of beauty of line, elegance of finish, good proportion, simplicity of ornament. Taking the other extreme, go into a grocery store and notice the artistic manner in which breakfast foods are being put up, notice the real art work in our everyday advertising, and you will see what I mean by art in everyday life, and you will also see that we are becoming more artistic even if the painters do declare that we are not. The business men of this country realize that art, as they express it, "good looks," is a decided factor in every business. Every manufacturer knows that a thing must not only work well and wear well, but that it absolutely must look well. The great need of the art world today is not more pictures, but more artists who will express their love of beauty thru such material as wood, metal, textiles, glass, etc., showing to us the possibilities of these materials and tools and processes for artistic expression. The rewards for such are sure and swift.

With the modern tendency towards industrial art, it is perfectly safe to assert that fifty years from now there will be more artists working in the mills and factories than in the studios, and when that does happen, we shall be on the high road to an American art that will take its place on a plane of equality with the other great art movements.

From the foregoing, it will be seen that we are not asking too much when we ask the art teachers of our elementary and high schools to understand the limitations of tools, the limitation and requirements of materials and processes. Our school art departments must discard the dilettante studio atmosphere and take on the new atmosphere of the real workshop. We must think of the paper design simply as a means to an end and not an end in itself, and in very many cases we shall find that we can discard the paper design entirely, working out our design directly with the tool, material and process.

The war has given to the artists of this country an opportunity that is staggering in its possibilities, provided they set it and grasp it. This country for years has been going to Paris, Vienna, Munich and Strasburg for its art. For years we have been guilty of the economic crime of sending over to Europe our raw material, aud then buying it back at an advance of 500 per cent for the vocational art which the Europeans have put into it. When a woman buys a dress, a hat, or a pair of shoes, she buys three things: material, the skill in workmanship and the art, and she pays more for the art than for the material and workmanship. The cloak-and-suit trade of New York City is now cooperating with the museum of natural history in originating designs, and when we consider the fact that in 1916 New York City alone produced $150,000,000 worth of cloaks and suits, and in 1916 the United States produced in ready-made women's garments $2,000,500,000 worth, and that in this line of goods the most important factor is the art, you can see the opportunity that lies before us.

PROBLEMS IN RAFFIA

Edward F. Worst, Supervisor of Elementary Manual Training
and Construction, Chicago, Ill.

(Conclusion)

Continuous Coil Basket.

Soak a No. 2 reed in hot water until pliable. Dampened raffia makes the work more even and smoother.

Thread the needle with the large end of the raffia. Scrape the reed, with a knife, 1½ inches from the end. Hold the reed in the left hand and wind the thread carefully around the scraped portion. Wind toward the point. Shape the covered end into a round coil and sew firmly thru the center until the coil is securely fastened. See that the coil is well covered with raffia.

Run eight or ten threads of raffia along with the reed.

Wind the thread over the reed, working from you. Bring the needle thru to the front, by pushing it thru the coil of reed and raffia. This is simply stitching over and over the one coil, as shown in Fig. 19.

Introduce a new thread by placing it along the reed and work over it until the end is securely fastened.

To introduce color, proceed in the same manner as in introducing new threads. Do not cut the threads in changing from one color to another, but carry them along with the reed and work over them.

In filling out designs, stitches are not counted as would naturally be supposed. The design must be filled in solid and it will take more or less stitches, according to the size of the thread. A pattern, of the design to be used, may be cut from paper, and laid on to the basket as the work progresses.

After the bottom of the basket has been made the desired size, begin shaping the upright part by holding the reed directly over the last coil, if the upright is to be perpendicular to the bottom. If the sides are to slant outward, the reed is held to the outer edge of the coil below. If the slant is to go toward the inside, place the reed to the inner edge of the coil below.

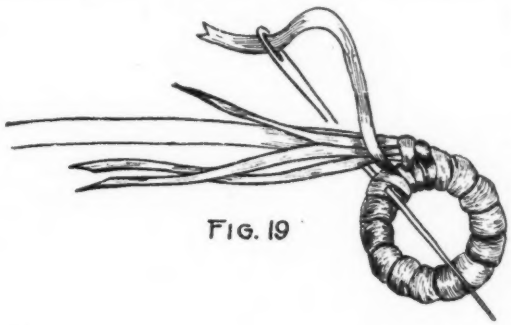


FIG. 19

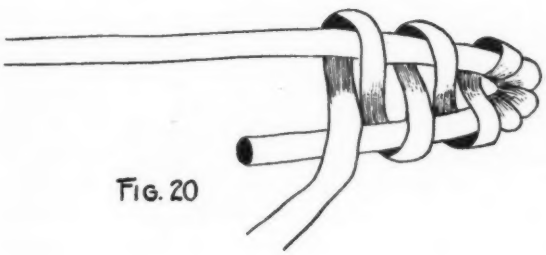


FIG. 20

To splice the reed, scrape the ends, to be spliced, two inches from the points, and place together, lapping one over the other, so that the size of one reed may be kept.

Continue sewing, holding the ends together until they are securely fastened. Finish the basket by scraping the reed to a point and finishing the coil off gradually.

This basket may be made with a rope of raffia or an ordinary clothes line rope for the foundation, but is not as satisfactory as when the reed is used.

Navajo Basket Stitch.

When beginning a round basket, proceed as in Fig. 19. Bring the thread back between the coil and reed, over the reed to the front and back between the coil and reed. Bring the needle thru to the front under the coil. The stitch is now complete. Fig. 20.

As the coil progresses, each stitch is passed between two stitches of the coil beneath. The raffia describes the figure eight in making the stitch.

For introducing new threads, color, design, splicing the reed and finishing, is the same as in the continuous coil basket.

Oval Basket—Navajo Weave.

To commence an oval basket, measure off six or eight inches of the reed and carefully bend at this point.

Hold in the left hand, the two reeds, keeping the short end underneath the long one, and the bent end toward the right hand. Fig. 20.

Commence weaving by wrapping the raffia several times around the bent end. Fig. 20.

Commence weaving the Navajo stitch. Draw the thread firmly and do not let the reeds spread apart.

Mariposa Basket Stitch.

To begin a round basket, follow the dictations given for the beginning of the continuous coil basket.

After the bent end is smoothly covered, bring the thread over the long reed from the back down between the two reeds, around the short reed and down between the two reeds again. Bring the thread up between the two reeds at the right of the stitch and down between the two reeds at the left of the stitch. This completes the stitch. Fig. 21. Both reeds are wound toward you. This is sometimes called the Open Work Stitch.

The method for introducing new threads, color,

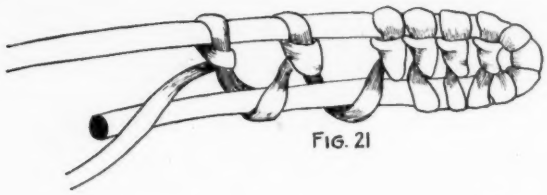


FIG. 21

FIG. 22

design, splicing the reed and finishing, is the same as that of the continuous coil basket.

Lazy Squaw Weave.

To begin a round basket follow the dictation as given for the continuous coil.

This is a long and short stitch.

Hold the coil in the left hand. Wrap the raffia toward you and around the reed, then over the reed again and down thru the center of the coil. This gives the long stitch, while wrapping the reed once gives the short stitch, Fig. 22.

In the Lazy Squaw Weave the thread is wound toward you just the opposite of the winding in the Navajo Weave.

For introducing new threads, color, design, splicing the reeds and finishing, the same as in previous baskets.

Supplementary Problems in Mechanical Drawing

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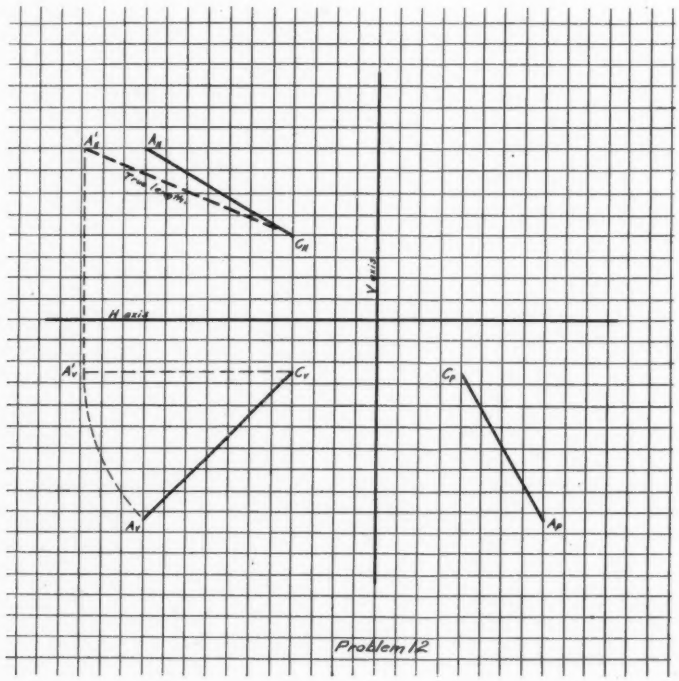
IN mechanical drawing it is possible for a student to make a most excellent and commendable drawing, so far as the finished product is concerned, without really knowing very much about what he has accomplished or how he has done it. This is partly because of the mechanical aids to his work which eliminate some of the personal elements of skill. It is easy to copy bit by bit instead of working by individual initiative. Thus it is that a school exhibit of mechanical drawing, no matter how fine appearing it may be, cannot signify a great deal unless we know something as to *how* the work was done. Comparatively speaking, it is easy for a class to copy most of the drawings it makes, and to turn out plates which look as good as, perhaps even better than, those made by a class which has been taught to comprehend and to know as it went along.



ONE OF THE PROBLEMS.

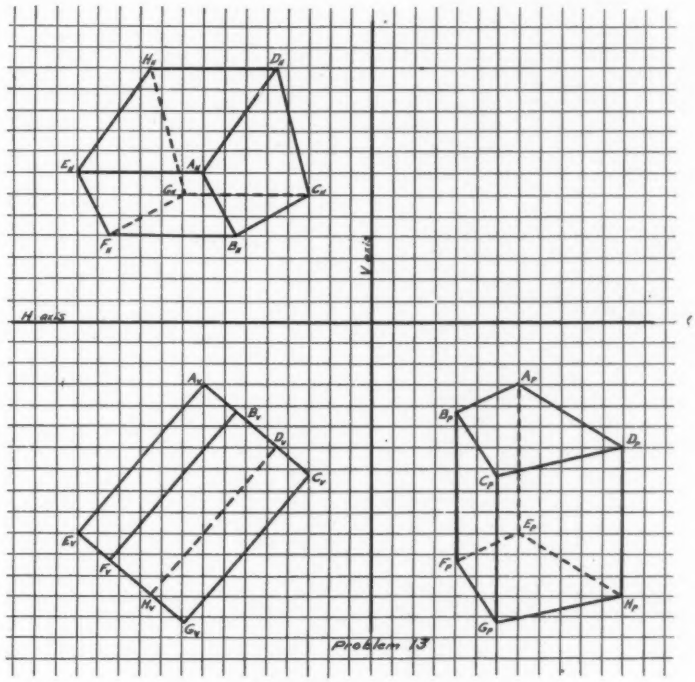
It is, therefore, essential that we should have some means of adequately testing our methods of teaching mechanical drawing, and the results we are obtaining therefrom. In other words, we should know whether the student is really securing a definite, usable under-

standing of the problems presented, or whether he is merely becoming an expert copyist. Many a student seems perfectly clear on the points presented at the time of the demonstration, and can go thru the entire problem with facility, but a few days or a few weeks later when he meets the same problem in class work or in a test, he falls down completely on it. Such lapses in essential knowledge, occurring habitually and among a wide diversity of students, can constitute nothing less than a severe criticism of our teaching methods. Often the things forgotten are the very ones the student should know above all others, indeed *must* know, if he is to carry away a usable knowledge from his school work.

The only plausible reason for these apparently complete lapses in memory is either that the pupil never really understood the problem in the first place, or else that he was not drilled upon it sufficiently to impress it indelibly upon his mind.

An examination of the usual mechanical drawing or "plate" will show it to be a very carefully planned and executed problem, taking a number of hours for completion. Because it is to be a finished product, and because it does take so long to complete it, the emphasis is rightly placed upon neatness and accuracy, rather than upon an understanding of foundational principles. Therefore, the ordinary method of school drawing does not provide either a quick and economical way for testing the ground-knowledge of theory beneath the delineation, or a convenient and easy scheme for drill in this theory. Hence it will not provide the two essentials named in the preceding paragraph, namely, to reveal whether or not the student really understood the problem in the first place, and, to give adequate repetitional drill to impress it upon his mind indelibly. Yet these are the very two things we must have if the copyist tendencies already noted are to be successfully combatted.

The following plan has been worked out to meet this situation. This plan has been used successfully in acutal classroom practice. Its aim has been already stated. Primarily it seeks to provide a drill whereby fundamental drafting facts will be so clearly impressed upon the student's mind, and with such an intelligent grasp of the underlying theory, as to make certain that he will be able to use them correctly whenever and wherever they apply. This plan contemplates a series of short, rapid repetitions of essential problems connected with the regular drawing work, and is based upon the supposition that, in this instance, accuracy and appearance may be made secondary to speed and results.



TYPICAL SUPPLEMENTARY PROBLEM.

A series of short problems such as these should be introduced into odd moments of the regular class periods, to be worked out by the students with pencil, triangles, scale and compass, on 8″ x 11″ sheets of cheap grade ⅛″ cross-section paper, without the aid of the tee square. The paper should not be tacked to the drawing board, and the section lines of the graph paper should be used as guide lines whenever possible. By these methods a good deal may be accomplished in a very few minutes, provided the pupil really knows what he is about. If he does not, this type of work will

soon show it, and his case can then be given the individual coaching which it demands. Assurance that practically every member of the class knows the theory, its use, and its application under varying conditions, may be obtained by repeating different applications of the same problem for successive days. The pupils may work on their own desks without in any way disturbing their regular drawings. They can resume the latter the minute they have finished the special problem without waiting for the teacher to reach them. Thus those who solve the problem easily can go on without waiting for the slow ones.

Excellent training will result from the placing and determining of various views with reference to the size of the paper, and to the H and the V Planes. It will be well, therefore, to emphasize this by leaving the locations and the sizes optional in as many cases as possible.

The following extracts will give an idea of the type of problems which should be used, and of how drill should be secured thru a repetition of the same principle in different forms. These problems have been taken somewhat at random from the "Home Problems Book" of the school with which the writer is connected. This Home Problems Book is a ledger in which each mechanical drawing teacher writes down the problem as soon as it is assigned. Thus a permanent record and a handy reference book for future use are built up. Most of these problems should be made up by the teacher as he sees the points which need emphasis in each class from day to day. If a regular reference book is used in the class, then many of the problems given in this special way may be based on those found in that book.

Since a usable understanding of the projection box is particularly desirable in any mechanical drawing class, and is, at the same time, one of the most difficult things to impress clearly upon the mind of the pupil, a rather complete set of projection box problems is given as an illustration of how that one particular difficulty may be effectively attacked in a way which will supplement and aid the regular classwork.

Problem I.

Use graph paper and a 3H pencil, and in letters ⅛" high, with spacing of $\frac{1}{32}$" between rows, print the first three paragraphs under "Working Drawings" in your textbook, down to the heavy type word "Views." Print entirely freehand, using a few 60 degree guide lines if necessary.

Problem III.

(a) Draw any given line, arbitrarily choose any given point on it, and erect a perpendicular to the line at this point.

(b) Draw any given line, and bisect it by means of a perpendicular.

(c) Show the method for constructing a hexagon, making it any size you wish.

Problem VI.

Draw any irregular polygon of not less than seven sides. Transfer this polygon to any other place on the paper you may wish, and construct it in exactly the same position as it was in the first place. To do this, first draw either a vertical or a horizontal reference line extending indefinitely from any corner of the polygon. Then transfer the angle formed by any one of the polygon's sides with this reference line, using the method as previously demonstrated. Taking them in order, add to the side thus transferred the remaining sides of the polygon, drawing them parallel with the corresponding sides of the original polygon by the use of the triangles as previously demonstrated. Using the dividers, make each side of the second polygon in turn equal in length to the like side of the first polygon. Following this method, any angular figure may be transferred a short distance in any direction and still have the same position as the original.

Problem VII.

Draw a projection box as shown on the blackboard. In this box draw a simple rectangular prism resting on the base of the projection box, and having its faces parallel to the sides of the box. Show its projections upon the three planes H, V, and P of the projection box.

Then draw a development of the projection box, and show the three views of the prism upon it.

Problem VIII.

The same as Problem VII, but a right rectangular prism to be set with faces *not* parallel to the sides of the projection box.

Problem IX.

Same as Problem VII, but a right cylinder.

Problem X.

Same as Problem VII, but a right hexagonal prism.

Problem XI.

Repeat Problem IX, placing the cylinder ½" above the bottom of the projection box.

Problem XII.

(See the accompanying figure.)

Given: Any line AC whose projections on the V and H planes make an angle of 45 degrees left with H and 30 degrees left with V.

Find: The projection on the P plane, and the true length of the line.

Problem XIII.

(See accompanying figure.)

Take a sheet of graph paper, and on it draw a right quadrilateral prism with its axis parallel to the H plane and oblique to the V plane to any angle you desire. Mark clearly the H axis and the V axis. Find the H, V, and P views of the prism, lettering or numbering each corner clearly in each view.

So good were the results realized from the trial of this plan in a certain school during the latter part of one semester, that the system was extended during the following semester to include one home lesson per week, thereby reducing the interruption of the regular class periods. The school administration allowed one-half credit extra for this, so that it was possible to make the home lessons required.

Several semesters' trial showed that a much more usable type of instruction was being created than under the old system where the stress was put on absolutely accurate, finished work to the exclusion of the fundamentals of theory.

"The talent of success is nothing more than doing what you can do well, without a thought of fame."

—*Longfellow.*

Illustrative Aids to Efficiency in Shop Instruction

L. H. Alberty, Winfield, Kans.

A COLLECTION of illustrative material is a valuable aid to teaching efficiency in the school shop. Every instructor understands the need for it and has gathered at least a few articles with which to demonstrate related facts and to convey supplementary information. But material needed for instruction is worse than valueless if it is not organized and directly at hand when it is wanted. What busy instructor has not felt the embarrassment of hunting thru a drawer or locker for a sample of wood or a blueprint, needed to bring out some important point, while a class of sixteen or eighteen boys stood by marking time?

As a means of thoroly organizing the samples and other material which have accumulated in the course of the writer's experience, a series of forty framed charts has been made up and placed on the walls of the shops and drawing rooms of the Winfield high school. In use these charts have proven helpful in bringing out details which are easily neglected under ordinary circumstances and have saved much time and trouble in preparing lesson outlines. They have facilitated the presentation of subject matter and have aroused great interest on the part of the boys. Incidentally, the frames have rendered the shop rooms and the drawing rooms attractive and generally interesting. The collection of the writer is described below in the hope that it may be of some value to other instructors.

For the frames illustrated, a uniform size of glass, 14 by 20 inches, was adopted and plain frames about one and one-half inches wide were made. The exhibits prepared were mounted on wall board. For the displays of wood or hardware one and one-fourth inch stock was used for the frames to allow plenty of depth between the glass and the wall-board. For the charts and pictures seven-eighths inch stock was used. The fastening of the articles was done by sewing them on with small wire, blind staples, or brads, as seemed most desirable. An interesting variation of the frames is obtained by using the same wood as the tree exhibited.

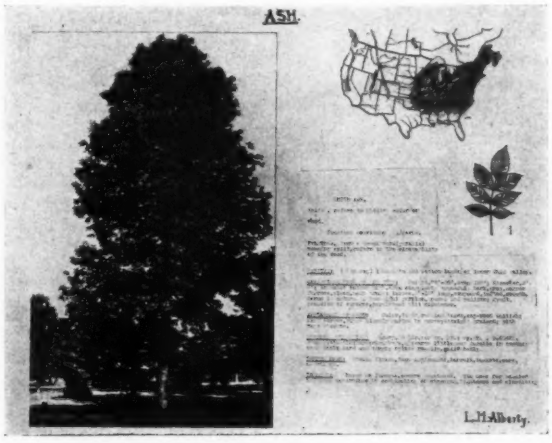


Fig. 1. A Tree Exhibit.

Fig. 1 illustrates one of a series of exhibits devoted to wood. It illustrates ash and it includes a large picture of a typical tree, an outline map showing the habitat of the tree and miscellaneous information concerning the wood. The picture is simply a large halftone similar to prints, which may be obtained from a number of publishers. The information included was obtained from books and pamphlets which are readily obtainable by industrial arts instructors. A leaf outline is included and by means of an inch scale shows the comparative size of the leaf.

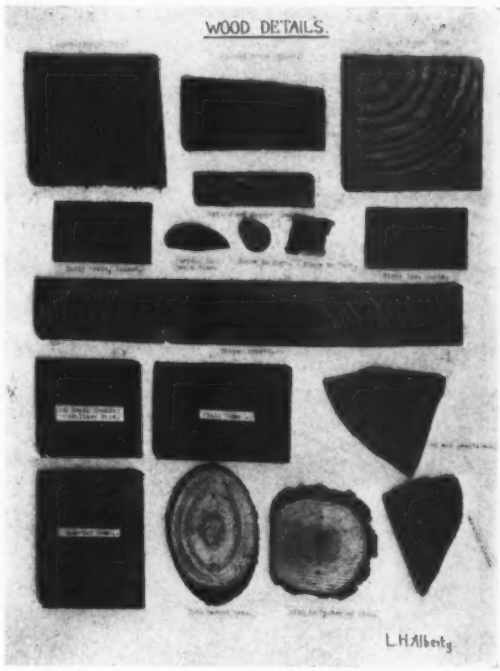


Fig. 2. Characteristics of Wood.

It is possible to mount samples of the wood and bark in one frame with the illustrative and descriptive material of a tree as described, but it will be found more helpful to group a number of wood samples in one frame where they can be compared and similarities and differences noted. In the frame illustrated the following information was included in typewritten form: Name and species of tree, habitat, characteristics of the tree, appearance of the wood, physical qualities, common uses and special marks. Among the woods illustrated in the writer's collection are ash, bass, beech, birch, red cedar, cherry, chestnut, cypress, elm, fir, gum, hemlock, hickory, larch, maple, mahogany, red oak, white oak, yellow pine, poplar, spruce, and walnut.

In the frames exhibiting wood and bark, the samples were placed in close proximity to bring woods that are similar in character close together. A typewritten list was placed in a corner of the charts. The latter has the advantage that it may be covered up when testing the ability of boys to identify wood.

Another frame (Figure 2) illustrated wood details, such as annual rings in porous and non-porous wood, heartwood, sapwood, cork, the effects of shrinking, checks in woods, etc., and such special forms as bird's-eye maple and curly walnut. This frame included also oak panels showing radial, tangential and cross sections to illustrate quarter sawing.

A further frame of wood details (Figure 3) includes an exhibit of common defects of wood such as loose knots, rotten, solid and spike knots, etc., rotten wood, dry rot, pecky cypress, mildew, sap streaks, pitch pockets, pith, wane and injured bark.

Another frame is made up of a drawing to illustrate seasoning and warping. The following facts are illus-

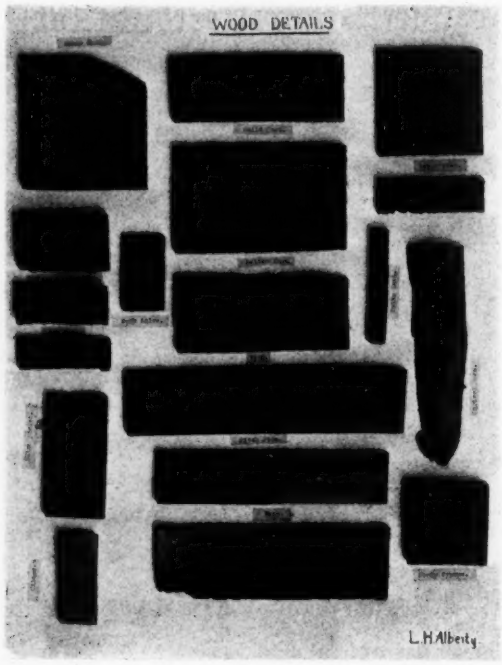


Fig. 3. Typical Wood Defects.

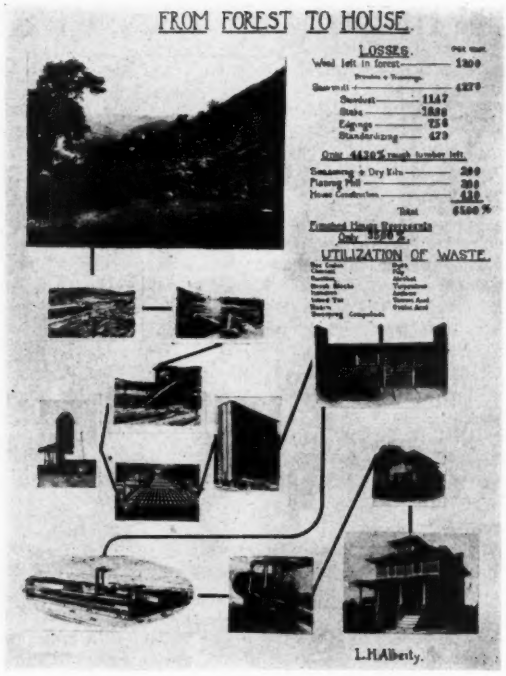


Fig. 4. Chart illustrating Wood Losses in Manufacture.

trated: (1) Drying out of the end of a square beam and its consequent warping, showing the ends of various beams cut from different parts of the tree; shapes assumed in shrinking and warping of planks and boards; illustrations of the shrinkage of sapwood showing checks, star shakes, heart shakes, cup or ring shakes and honeycombing; (2) a section of a tree showing bark, cortex, bast, cambium, and wood showing the sap, heart and pith; (3) drawings showing how knots are caused and how cell walls shrink, the greater shrinkage of summer than spring cells; (4) drawings of the butt end of tree trunk ruled across it the various ways of quartering and cutting quartered oak as well as plain oak. The medullary rays are also drawn on these last illustrations to make them more easily explained and understood.

Few people have any idea whatever of the amount of wood which is really utilized from a tree. To aid in instruction and to have it in a form to be plainly understood

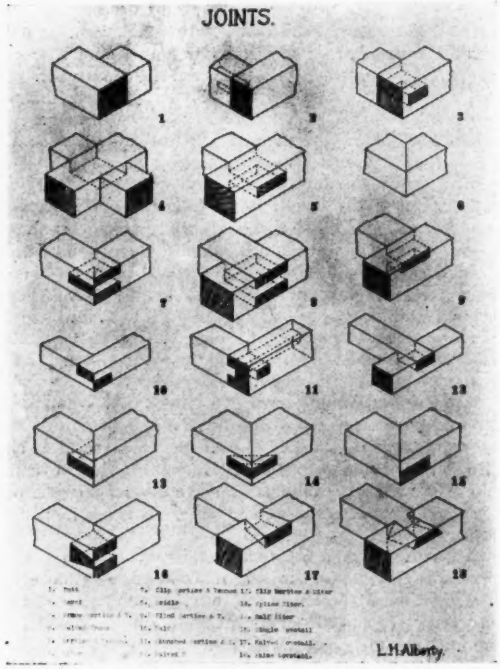


Fig. 5. Typical Wood Joints.

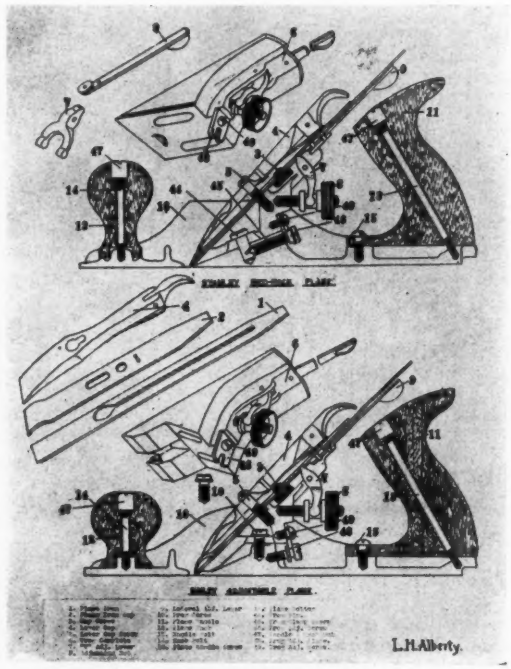


Fig. 6. Details of a Tool.

by the chance observer, a chart (Figure 4) was made tracing wood losses from the forest to user. The government exhibits at the San Francisco Fair were used as basis for the facts. The kodak pictures which add to the attractiveness of the whole, begin with the forest and connect by a heavy line in progressive order the following: Forest, log, rafts, sawmills, slab burner, inside of the mill, yards, dry kiln, factory, inside of shop, house under construction and lastly the finished house. The chart showing losses and utilization of waste products is as follows:

Losses.

Wood left in forest (branches and trimmings)	13.	per cent
Sawmill	42.70	per cent
Sawdust	11.47	per cent
Slabs	18.88	per cent
Edgings	7.56	per cent
Standardizing	4.79	per cent

Only 44.30 per cent rough lumber left after getting thru the sawmill.

Seasoning and dry kilning	2.	per cent
Planing mill	3.	per cent
House construction	4.30	per cent
	65	per cent

Finished house represents 35 per cent.

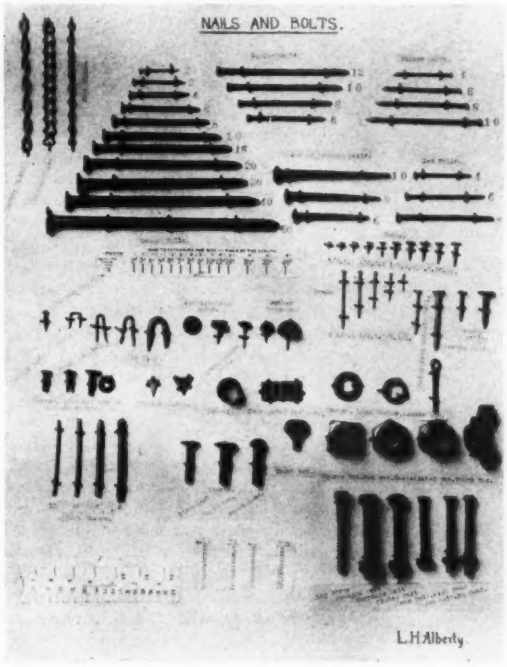


Fig. 7. Collection of Nails, Bolts, etc.

Utilization of Waste.

Boxes, charcoal, excelsior, brush blocks, handles, wood tar, rosin, sweeping compound, dyes, pulps, alcohol, turpentine, acetone, tannic acid, oxalic acid.

In the woodworking shop and in the drawing room a chart showing by means of isometric drawings the common woodworking joints was found exceedingly valuable. (Figure 5.) Similar charts illustrate box corners, spline, matched joints, etc., etc., and are almost indispensable. In each chart the illustrations are numbered and the key is placed in one corner for reference. Another chart (Figure 6) is used to illustrate two widely used planes.

Several frames are devoted to nails, screws and hardware. They contain a good deal of valuable information and assist in teaching the proper names of commonly used articles. In teaching, it is helpful to the busy instructor

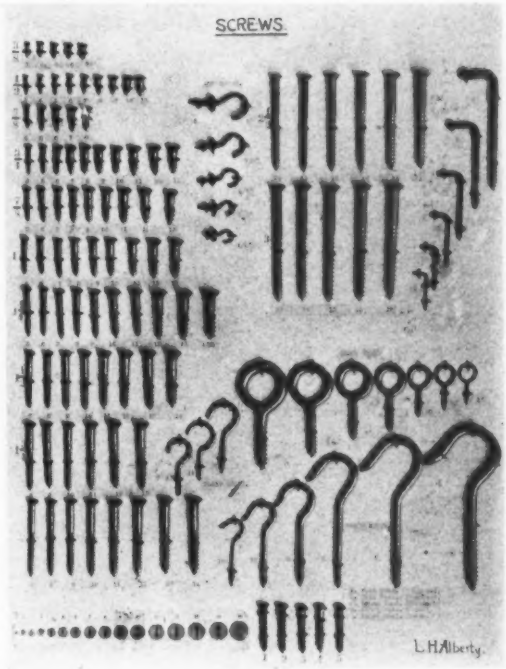


Fig. 8. A Collection of Screws, Hooks, etc.

to refer to the chart a boy who has made a mistake so as to fix in the boy's mind the name as well as the size of the articles.

The chart illustrated in Figure 7 contains nails and bolts and in addition, several chains, tacks, brads, roofing, nails, staples, etc. Mounted in the glass there are several small, typewritten labels containing related information. Gauges for measuring nails and wire are included.

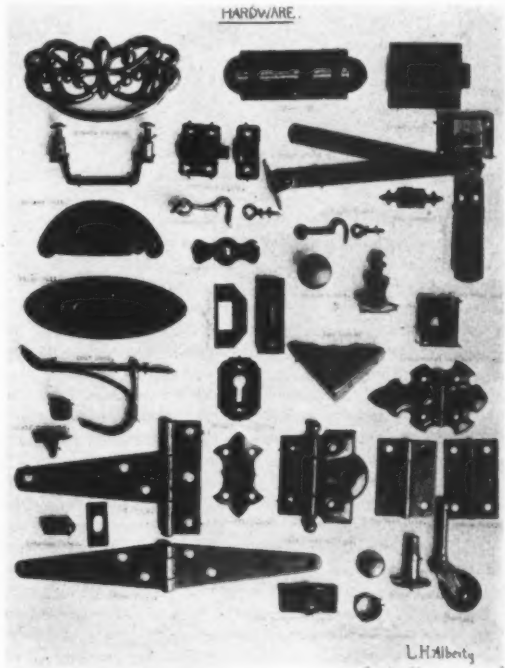


Fig. 9 Hardware Exhibit.

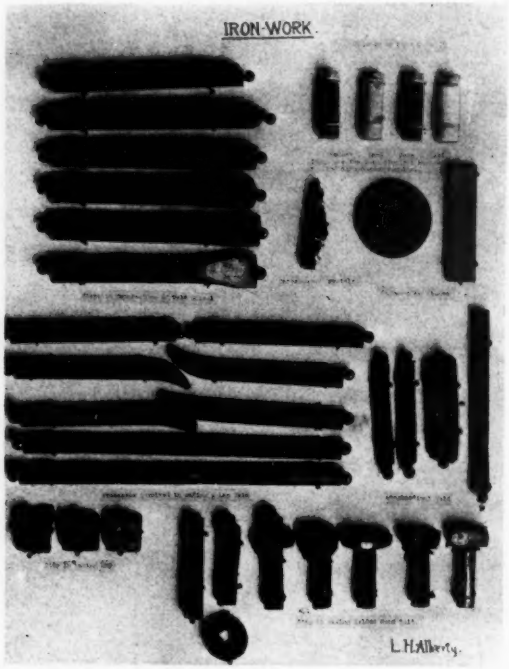


Fig. 10, A Forge Exhibit.

A second frame of hardwood includes screws and hooks labeled according to length and gauge. In the lower left-hand corner is a handy chart made up of screw heads in a block of wood, to help boys in determining the gauge of any screw which they may be using.

A very interesting frame contains small hardware, each with a label containing the proper trade names. A glance at Figure 9 will show the character and inclusiveness of the exhibit. Other frames contain samples of files, rasps, augers, gimlets, drill bits and other tools used in wood working.

Space will not permit a description of all the remainder of the charts. One frame that is found very helpful contains gimlets and small drills, with a chart or table for determining size of drill to use for various wood screws. A chart of wood screws was published some time ago in THE INDUSTRIAL-ARTS MAGAZINE and one similar to this is included in the frame. Other frames included mouldings, metal lath and various building papers, etc.

The wood shop is not alone in offering opportunities for exhibits. In the machine and forge shops, helpful exhibits can be made to illustrate various processes in connection with the current classwork. Figure 10 is a chart which the author is using. In the upper left-hand corner are mounted several pieces of steel to illustrate the various steps in shaping, tempering and grinding a cold chisel. In the right-hand corner of the same chart are small vials containing sawdust, sand, coke and salt which are the ingredients used in making carborundum. Just below there are a carborundum crystal, a small carborundum grinding wheel and a knife stone. A lap weld and a longitudinal weld are illustrated in the lower part of the chart. The steps in making a nut and a welded head bolt are also shown. The writer has prepared also, charts to illustrate the making of tongs and other products of the forge shop.

Considerable help has been received from reference scrapbooks prepared for use in the shop classes. Good furniture designs are obtainable from a large variety of sources such as catalogs, magazines and newspapers. These may be made useful if they are properly classified in groups. Some arrangement must also be provided so that any number of additions may be made to each group. The problem may be solved by using loose-leaf post binders about 9 by 12 inches in size, such as are shown in the illustration (Figure 11). The binders may be easily unclamped and any leaf may be taken out. The writer has used successfully a heavy, chocolate-colored paper which is tough and does not show dirt. A kraft paper might also be used and is somewhat cheaper. In making leaves for the books, it is well to lap the sheet over twice at one end for a distance of about $\frac{3}{4}$ or $\frac{5}{8}$ of an inch. The lap should be well glued and pressed down to reinforce the leaf and to strengthen the holes which are punched. Not only furniture but also cement work, iron work, drawing hints, lettering, book lists, farm carpentry problems, etc., may be grouped in such books for ready reference.

In the writer's collection three books are devoted to furniture and an index is provided for the same. The sections on furniture are numbered according to the subject and include some 61 types, including toys. The subsequent books are numbered as follows:

4: *House Plans*—section 62, house plans and section 63, special floor plans.

5: *Carpentry*—section 64, sleeping porches, 65 additions, 66 garages, 67 architectural drawing hints, 68 house framing details, and 69 built in details.

6: Section 70, house and barn framing, 71 farm carpentry, 72 machine drawing, 73 designs, 74 ironwork, and 75, cement work.

7: Section 76, turning, 77 general shop hints, 78 office furniture, 79 schoolroom desks, 80 school furniture, 81 manual equipment, 82 domestic science equipment, 83 domestic art equipment; 84 science laboratory equipment, 85 wood carving, 86 furniture construction ideas and details, 87 period furniture, and 88 drawing and lettering.

8: *Notes and Recipes for Instructor*—Section 89, drawing conventions, details, cross hatching; 90 data from experimental tests, 91 recipes, 92 manual reports condensed, 93 paper assignments, 94 rural and grade manual outlines, 95 beginning manual high school outlines, 96 forging outlines, 97 machine shop outlines, 98 mechanical drawing outlines, 99 machine drawing outlines, 100 printed shop forms for reference, 101 writeups turned out by the manual training department, 102 carpentry notes, 103 manual book lists.

9: *Manual Training Blueprints*—Elementary grade work for seventh and eighth grades, high school, turning, ironwork in forging and bench work, and machine shop work.

A great deal of information cannot be kept in book form and for such material a large letter file may be used. One or more box letter files contain large sheet house and barn plans, such as are obtainable from several lumber manufacturers' associations and as supplements to several well known magazines. Another is used for special writeups and clippings on manual training subjects, vocational work, etc., and another for tracings of manual training courses. This plan works well in practice and requires very little time to keep in shape when once worked out.

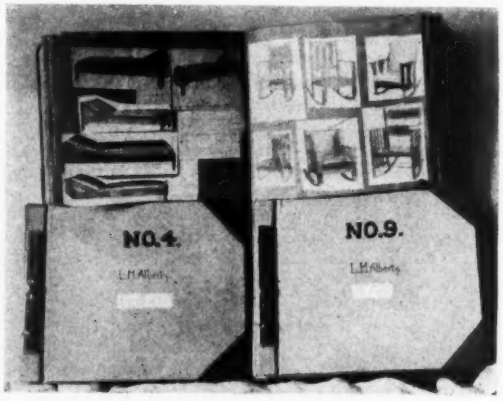


Fig. 11. Scrap Books.

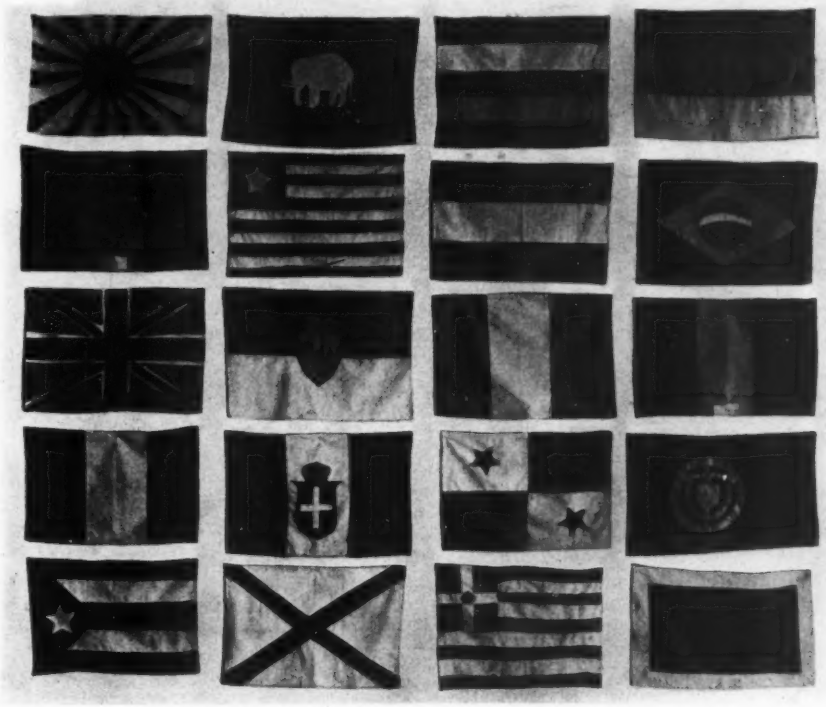
THE MAKING OF ALLIED FLAGS

Lucile Wisner, Kingsport, Tenn.

In January, 1919, the Kingsport high school gave an entertainment which was of a patriotic nature. One part of the program consisted of the national songs of the different allied countries. These songs were sung by different grade classes, one member of which carried the representative flag.

It is easy to obtain flags of the United States, Great Britain, France, Belgium, and Italy, but to buy twenty different allied flags, all of the same size, was not a simple problem. The only solution was to make them.

The first thing was to see which flags were needed and to get the exact design of these flags. It was found that a large dictionary gave most of the pictures of the flags and also good prints were found in the October number of The National Geographic Magazine of 1917. The ensign or National flag was chosen in every case possible rather than the merchant or war flag.



FLAGS OF THE ALLIED NATIONS.

Top Row (left to right): (1) Japan; (2) Siam; (3) China; (4) Serbia. Second Row: (1) Belgium; (2) Liberia; (3) Brazil; (4) Nicaragua. Third Row: (1) England; (2) San Marino; (3) Guatemala; (4) Roumania. Fourth Row: (1) France; (2) Italy; (3) Panama; (4) Portugal. Fifth Row: (1) Cuba; (2) Russia; (3) Greece; (4) Montenegro.

It is well to get the exact shade of cloth in copying a flag. In some instances the different prints varied slightly as to color, especially in the shades of blue. The piece of cloth which matched either of the prints was chosen. Samples from several large concerns were sent for. Cambric and muslin were used and in several instances sateen was selected because the color seemed a better match.

A paper pattern was then made, twelve by eighteen inches in size, and the design was drawn upon it exactly as the print in the reference books showed. Crayons were used to color the paper like the print. This gave the pupil a clear idea of the problem before she started. These paper patterns were then cut apart and used to cut out the design of the flag.

The flags were cut to be twelve by eighteen inches when finished, and allowance was made for seams and hems on the pattern. The strips were torn for the flags and basted together, then sewed on the machine with thread of the same color as the goods. The seams were made plain, one-fourth of an inch wide, and felled down flat on the wrong side, one-eighth of an inch from the first stitching. The goods did not ravel and flatter, and neater looking seams could be made this way. The hems were made less than one-fourth inch. In cases where the design was intricate with many separate pieces, as the British Jack, the background was one piece and the strips were sewed onto it. Where the coat-of-arms was used, the shape was cut out and the design was drawn in with ink.

The countries represented by the flags were: Belgium France, Italy, Montenegro, Guatemala, Nicaragua, Portugal, Serbia, Russia, Liberia, China, Japan, Great Britain, Siam, San Marino, Brazil, Greece, Panama, Cuba, and Roumania.

In working out the problem something was gained besides the practical work. The pupils showed their patriotic spirit in a concrete way. It had made clearer in their minds what people were our allies and they learned to know the flags of the countries which had joined ours in the common cause. The pupils learned to respect these flags as we respect our Stars and Stripes. Aside from the patriotic viewpoint several ideas of helpfulness were brought out in the making. The girls had learned to be exact, for it makes a difference which colors go next to each other as in the Chinese or Roumanian flags. They had gained a sense of proportion and best of all, in a practical way, they had learned to design and to apply what they learned.

INDUSTRIAL-ARTS MAGAZINE

Board of Editors

E. J. LAKE S. J. VAUGHN,
W. H. HENDERSON

EDITORIAL

THE ADVICE OF EXPERTS.

It has been quite the custom for school boards to employ experts to handle difficult tasks and then immediately to tell them exactly what they *must* and what they *must not* do.

Men of vision and capacity have been so circumscribed by dictation, regulation, and restriction as wholly to nullify their efforts, causing failure where success was easily possible, and worst of all, fastening upon them the stigma of a failure for which they were in no wise responsible.

Instances are matters of common knowledge where high-grade vocational men were employed ostensibly to establish a vocational system, school, or department. They reported for duty with hopes and enthusiasm high, only to find that the plan for their work was a mere accident, a compromise between rival factions, a passing fancy for "something modern," a desire to pacify the public clamor against the inefficiency of the schools, or other extraneous considerations, and not at all, as they had supposed, a serious, well defined aim to put into operation a permanent and effective system for the preparation of boys and girls for efficient living.

Often in such cases, the boards and superintendents, after having gotten satisfactory newspaper publicity, are content simply to call their old-fashioned manual training by a new name, shift some of the pupils and equipment from one building to another, and to notify the new "director" that everything is all O. K. and that "radical innovations" are inadvisable.

True, many of such actions are due to a lack of understanding on the part of those in authority as to just what is needed and just how to go about its accomplishment. And here is the point of our story. If there is a problem demanding the services of an expert, such services should by all means be secured. But when once the expert is on the job, he should be given at least a fighting chance to succeed. He should be given every possible freedom, consistent with financial limitations and administrative unity, to investigate the field of operations, to determine the specific needs, and to recommend appropriate lines of action before the matter is reduced to a fixed program.

Once his recommendations have been adopted, the authorities should hold the expert strictly responsible for the operation of the scheme to which they have thus committed themselves.

No real man with a fair chance objects to being held responsible for failures that are traceable directly to him. But *every real man does* and *should* object to suffering the penalty of failure that comes thru no fault of his but that inheres in the conditions which he cannot control.

IN THE GOOD NEW SUMMER TIME.

It is now time to plan for that summer diversion. Summer vacations are obsolete to the teachers of this strenuous age. The most significant substitute we can think of is "summer diversion" because a diversion is a compromise between a continuous job and a vacation. Such early reports as we have received would indicate that many teachers are planning to transform teacher to pupil and take a course in one of the many summer schools. Of course this is commendable and will perhaps interest the school officials to reconsider the matter of raising salaries. We have a suggestion to make that is based on the very evident need for more and better teachers of the manual arts. The school trained teacher of the manual arts knows how to conduct class instruction but is only a fair workman. The tradesman most often knows nothing of teaching, but is a trained workman. We suggest that they trade jobs as a summer diversion in the good new summer time.

THINKING IT THRU.

In our absorbing interest in the material things of industry and their production the important element in the presentation of manual exercises that is most likely to be neglected by the manual arts teacher is the necessity of each pupil thinking thru the problem on which he is working.

Teachers no less than officials are invariably disappointed in the quality and quantity of work produced by classes in the manual arts. The time allowed for work is abominably short. Equipment is often lacking. The temptation to concentrate the efforts of the most capable pupils on a few showy pieces of work is almost beyond denial.

There are two safeguards against superficial manual work. One is the simplification of the project and the other is preliminary drawing and specifications for every project. Let us resolve as manual arts teachers that the pupil shall prepare drawings and specifications for every project he makes and in the development of those drawings and specifications shall think thru the problem in hand to that point of simple solution which will not only make the object itself practical but will make the study of it a practical problem in the education of the pupil.

THE SNAP THAT WON.

There is a man in a middle-western town who invented the most widely used button on the market. It's the common snap fastener seen on all sorts of gloves.

The first attempt he made to market the article resulted in complete failure and considerable financial

loss. The button was a beautiful, noiseless affair. It went together so quietly and with such ease, that he thought it was a winner—but it wasn't.

The second attempt was different. The fasteners looked exactly like the first lot, but they had snap—they went together with a bang. They now have snapped their way into every glove on the market.

Curious? Not at all; it's the American psychology. The mind of the American insists on being satisfied. It wants to *know* that things are done, put across, finished, and it insists on having an alarm sound to signify the fact. The hen must cackle, the clock strike, the whistle blow, the bell ring, the horn sound.

There's a moral. There are thousands of teachers who never quite convince themselves and the public that they have arrived. It's always a little uncertain whether they can put things across. There is absence of snap, ginger, bang that go with the idea of things done.

Let's not misunderstand. It's not *noise* that counts; it's a subtler and surer indication of the ability to "put things over." It's the ability somehow to satisfy one's self and the public that he always "delivers the goods."

Paraphrasing a great commander, "A little more snap, Captain Brag!"

THE QUESTIONNAIRE SPASM.

THE American educator has spasms—a kind of epileptic as it were. And since his fits are occasional rather than periodic and the symptoms are not well defined, we are led to observe that they are not epileptic-like, after all. (Discuss this with your family physician; we must proceed to a consideration of the happily "late lamented" questionnaire spasm.)

We are not sure that it will be of service to raise a warning finger against any disposition to accept without question the findings of an investigation by the questionnaire method. Indeed we are not sure that there are any large numbers of people who accept with entire confidence the results of such investigations. This is not saying that the questionnaire has not done some valuable service, but as a general proposition, it is a rather defective instrument for extracting information.

In the first place, most questionnaires are both interminable and indefinite. In the second place, most of them are never answered and hence the conclusions are based upon insufficient, even if accurate, data. In the next place, a goodly per cent of the data is both biased and inaccurate—biased because furnished by those most vitally concerned with the results and inaccurate because frequently the data are furnished by those least familiar with the facts, and further because the questionnaires are often hurriedly and incompletely filled out.

Once upon a time, it became our official duty to ascertain by questionnaire how many people were going to be present at a banquet at a certain place on a certain date. Thirty-seven people said they'd be there. Four hundred people actually were present, but of the four hundred there were only seventeen of the original thirty-seven.

If you are contemplating a questionnaire spasm, our advice is *"Don't."* But if you *do*, make it *short*. Make its scope both limited and definite. Make your questions sensible and simple instead of senile and sonorous. Make as many of the questions as possible answerable by "yes" or "no." And when it's done, be very discreet in selecting your crowd to inflict it upon. And, finally, *use* the data collected in drawing your conclusions. This last is not a challenge; it's a piece of advice.

MENTAL RESPONSE.

MENTALITY tests, corresponding to those given in the national army camps and officers' training schools, have recently been given to large bodies of students in colleges where military training is carried on. Results are not available from all of these schools but results from one school of four thousand students are significant. These tests are not of specific knowledge. Most of the questions are so simple that a child of twelve might answer them if given time to deliberate. The tests are designed to determine quickness of mental response from clear, definite understanding of positive statements and orders.

Of course, such mental response has especial value in military efficiency, but we wonder if it has not value also in industrial efficiency which by virtue of modern development is not unlike military organization in the necessity of keen mental response on the part of the individual workman.

It is encouraging to note that of four thousand college students who took the test, the average result was well above that required of officers in the army. It is also interesting to note that the difference of average between freshmen and seniors was so small that quickness of mental response was evidently not greatly developed by the college course of four years.

Americans have prided themselves on a supposed quickness of mental response and a consequent initiative over other peoples of the world. We have been accused of confusing this accomplishment with educational advantages of a more reserved and substantial sort, yet one who has followed the routine of class exercise in our American schools cannot but wonder if the old time mental gymnastics of our rural school days did not have value in stimulating a very essential quality of the successful individual of the present time.

Life certainly demands the power of deliberate reasoning based on a wealth of understanding which experience alone can give but it also frequently demands a quick, decisive and clear mental response from definite conditions.

The Federal Board for Vocational Education **has announced that it is prepared to undertake the vocational re-training of American citizens who have been disabled while in the military service of the Allies. The Federal Board has recently come into possession of a gift fund for this purpose.**

PROBLEMS AND PROJECTS

The Department of Problems and Projects aims to present each month a wide variety of class and shop projects in the Industrial Arts. Successful problems are invited and will be paid for. A brief description of constructed problems, not exceeding 250 words in length, should be accompanied by a good working drawing. The originals of the problems in drawing and design should be sent.

Problems in benchwork, machine shop practice, turning, patternmaking, sewing, millinery, forging, cooking, jewelry, bookbinding, basketry, pottery, leather work, cement work, foundry work, and other lines of industrial-arts work are desired for consideration. The editors will not accept the old hackneyed problems of footstools, taborets, towel holders, etc., which have been made from time immemorial, ad nauseum.

Drawings and manuscripts should be addressed: The Editors, INDUSTRIAL-ARTS MAGAZINE, Milwaukee, Wis.

ELECTRIC TABLE LAMP.

H. P. Gerber, The Northern Normal and Industrial School, Aberdeen, South Dakota.

The accompanying working drawing and halftone illustrate a two-light lamp which has a total height of 26 inches. The method for building up the shaft is given for stock economy. The hole or wiring space thru the center is made by grooving each half before gluing. Short plugs are glued in at each end to facilitate alignment and to provide contact for the lathe centers. While grooving, it is advisable to have a piece of one-eighth inch pipe on hand in order to insure a perfect fit.

Both ends of the pipe are threaded. At the upper end a socket may be applied if a single light lamp is desired, but the two-light brass fixture sold on the market may be used.

The drawing indicates the position of the work while being turned. The base is screwed to a face plate and remains so until the lamp has been turned and finished. The base and shaft, however, are turned separately but are glued together in the lathe and finished as one piece.

In this particular instance figured mahogany was used and the method of finishing follows: After the lamp is thoroly sanded apply a solution of one teaspoonful potassium bichromate to one pint of water and after dry, smooth with No. 00 sandpaper. Follow with one application of mahogany water stain. (The stain used in this case was made by mixing potassium bichromate, walnut crystals, mohogany red, and mahogany brown powder stains with water in such proportions as to produce a shade to our liking.) Sand lightly with No. 00 paper and apply dark mahogany or any dark brown paste filler, which must be

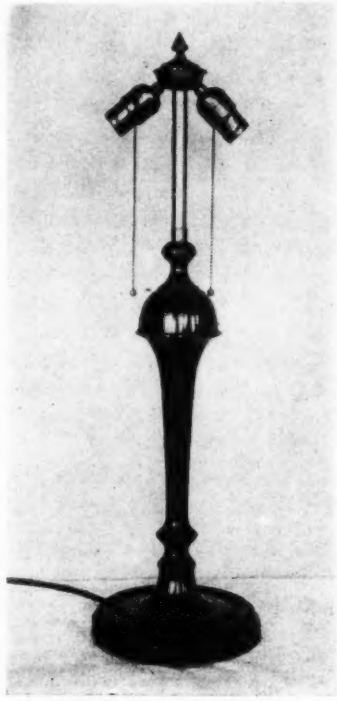


TABLE LAMP BASE

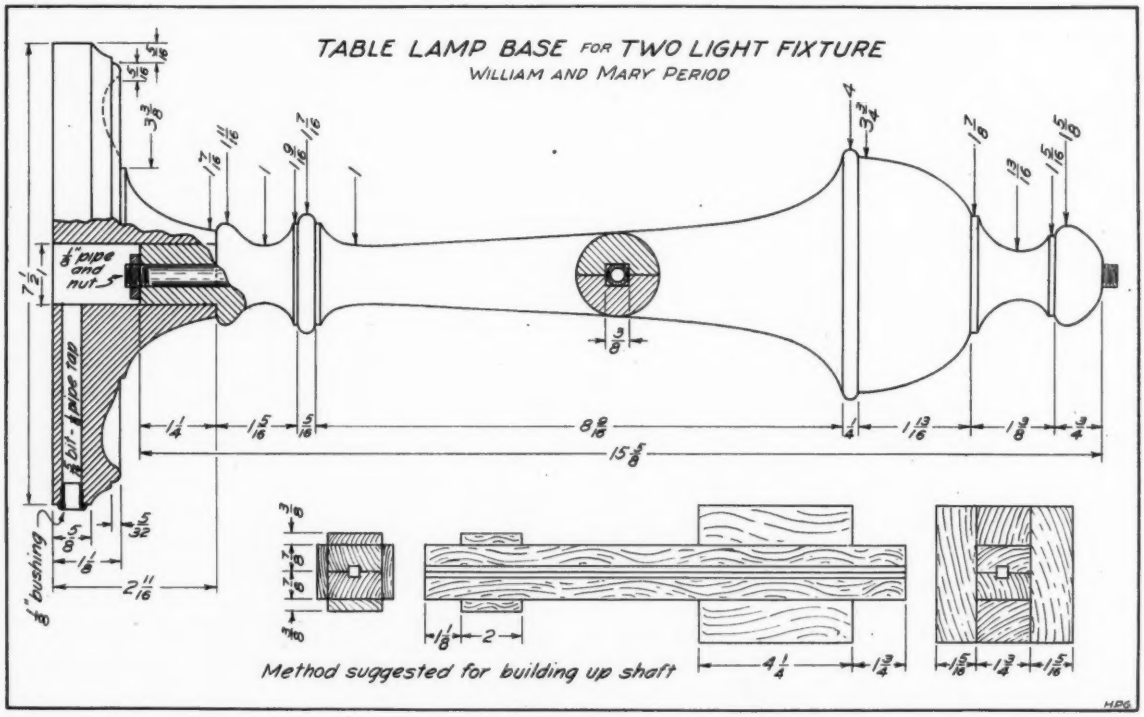


TABLE LAMP BASE FOR TWO LIGHT FIXTURE
WILLIAM AND MARY PERIOD
⅜" pipe and nut
⅜" bushing
Method suggested for building up shaft
HPG

rubbed in well and removed with burlap when the surface has lost its gloss. Allow from 24 to 48 hours for setting, then begin polishing by applying shellac with cheese cloth folded several times. During polishing the work should revolve at lowest speed. To lubricate or prevent the shellac from pulling or gumming, apply a small quantity of Wesson oil. After the surface has been well covered allow the polish to set until the following day when the same process is continued but less oil is used. At all times use as little oil as possible.

After experimenting with various oils we found that Wesson oil gives much better satisfaction than linseed oil and works equally as well as olive oil, or sweet oil and costs much less.

When polishing is nearly completed, thin down the shellac or use a spirit French lacquer with just a little oil on the cloth for the final touch.

The best finish is secured by applying a little polish each day for several days instead of attempting to finish the job in an hour or less.

The $\frac{7}{16}$ inch hole in the base is bored while the work is held in the lathe. Then top and screw a bushing in place. Remove the face plate and bore out the plugs at both ends with a $\frac{3}{8}$ inch bit.

In wiring use fixture wire in the pipe and connect with silk cord in the large opening at the base.

Felt is usually glued to the under side.

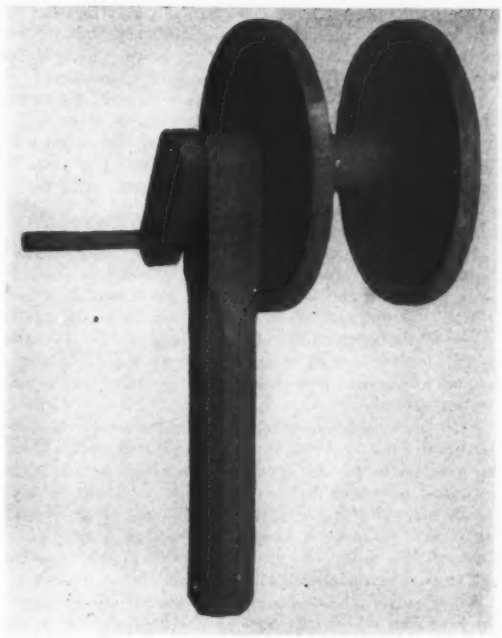
A KITE STRING REEL.

Arthur B. McCall, Springfield, Ill.

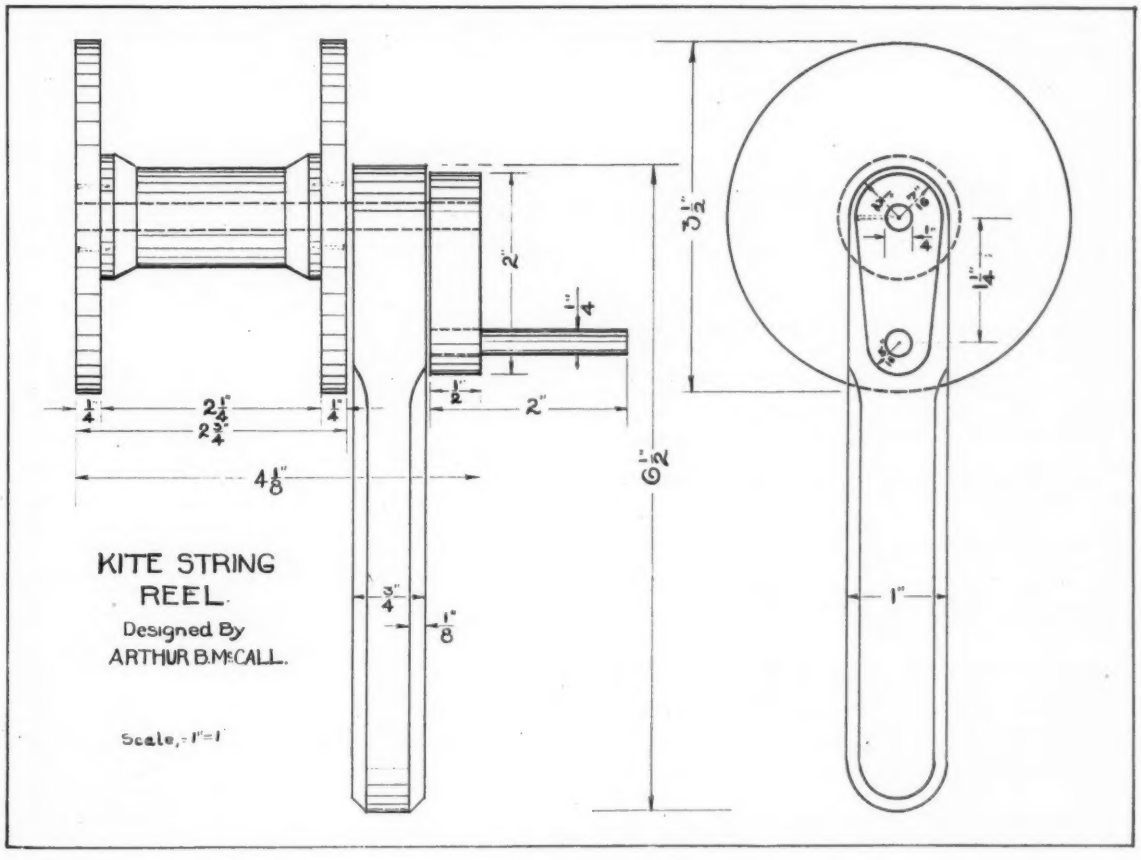
This problem is especially good for use in a seventh or eighth grade class in woodworking for it involved the element of interest all the way from the making of the drawing to the finishing of the model in the shop.

The tool processes involved are the use of the plane, coping saw, file, brace and bit, as well as champhering, nailing and gluing. Some of the boys will be able to use the spoke-shave in smoothing the rim of the wheels and round ends of the handle.

This makes a good model to use up the small pieces



THE FINISHED KITE REEL



from the scrap box. When the class is ready to start work on this model the instructor should tell the boys to bring from the sewing machine drawer at home the best spool they can find (with the mother's consent of course).

The order of construction is as follows: Square the handle, locate the center for the radius to mark out the round end, after rounding this end use the same center point on which to bore the ¼" spindle hole. Here the class will find it a good place to use a jig to make sure the hole goes straight thru the piece.

In making the crank the boy will make a center line along its length on which to locate the two centers for the ¼" holes, but the entire outline of the crank should be made in pencil on the wood and then the holes bored before the outline is cut out of the wood, this to avoid splitting the piece while boring the holes. In making the 3½" wheels however there is not so much danger of splitting and the wheels should be cut out following a penciled circle before the hole is bored.

When assembling, tack the wheels on to the spool while the dowel rod sticks thru them to hold them in place. When gluing the string drum as assembled on the spindle care should be taken to put the glue in the hole with a small stick from one end and push the spindle in from the opposite end, turning it to spread the glue over the inner surface of the hole. Next put on the handle and then secure the crank on the spindle with a brad.

When this reel is in use the boy can easily stop the turning of the reel when letting the kite out by a slight pressure on the side of the wheel next to the handle. Then to hold it he can loop the string once over the crank handle.

THE USE OF JIGS IN MAKING TRIANGLES.

Frank B. Raebig, Supervisor of Manual Training, Kankakee, Ill.

To secure speed, production, and accurate duplication with a minimum of effort there is no better method than by the use of jigs. The truth of this statement is easily verified by a trip thru some modern industrial establishment.

When to make jigs, and how to use them, is a problem that is only solved by considering the immediate conditions that are to be met. It is, therefore, very important when a new problem confronts us to think and see if it can not be done advantageously by the use of some jig.

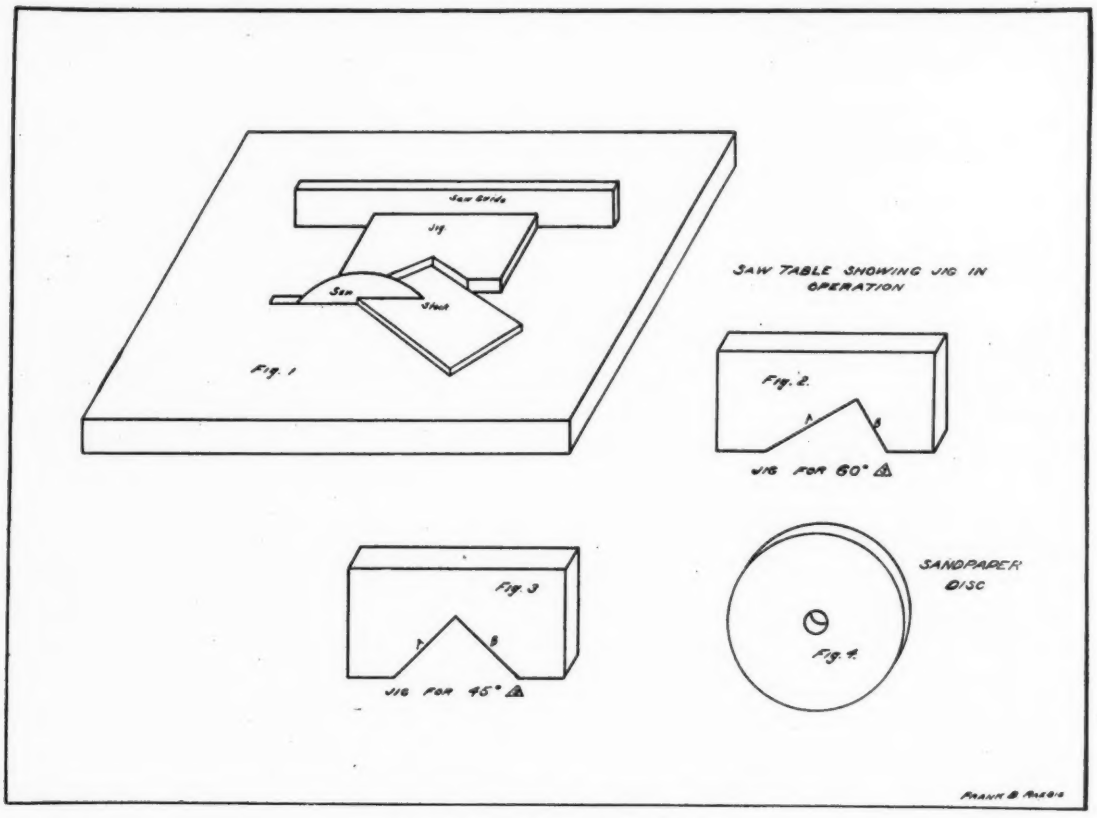
Not long ago the writer had an occasion to supply several dozen of 45 degree and 30 and 60 degree triangles. To purchase them was out of the question, so a method had to be devised whereby they could be had very quickly with a minimum of trouble. After some consideration he decided to make them by first making two jigs and cutting them on the saw bench.

The jigs shown in Figs. 2 and 3 are very simple of construction and very little explanation is necessary. To make them two pieces of inch stock were procured large enough to permit cutting out a triangle the size of the one that we wish to make or a little smaller. Care must be taken, however, that the sides "A" and "B" in Figs. 2 and 3 form an angle of 90 degrees and that these sides be perfectly straight, otherwise inaccurate results will be obtained. After these jigs have been made their use is shown in Fig. 1.

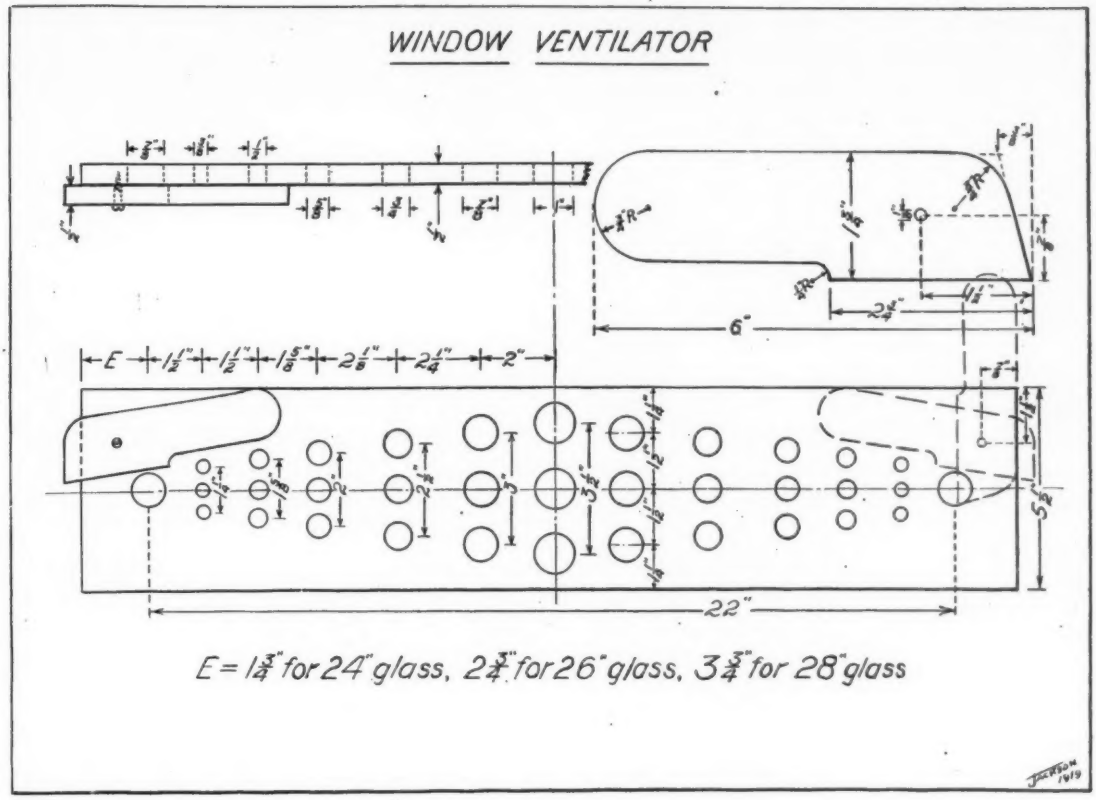
The stock of which these triangles was made was three-ply veneer, which insured against warpage. The ends were cut square and about the length of the side of the triangle. This squared end of the stock was then placed in the jig, the jig was placed against the saw guide and the guide was set so that the side against the saw would form the third side of the triangle, and the jig was passed forward. The same jig could be used for a larger or a smaller size triangle than the one for which it was planned by simply moving the saw guide farther from or nearer to the saw.

After the triangles were all cut the next problem was to smooth the edges so that they would be fit for use. Had a disc sander been available it would have been an easy matter, but since such a machine was not available some other method had to be devised.

To meet this situation a hardwood disc was made and a



JIGS FOR MAKING TRIANGLES



DETAILS OF WOODEN WINDOW VENTILATOR

hole drilled in the center the same size as that of the saw mandrel. On one face of this disc sandpaper was glued. This disc was then put on the saw mandrel instead of the saw. With this arrangement a very satisfactory disc sander was improvised. This is a much better arrangement than that of placing the sandpaper disc on the lathe. The lathe has no table on which the work to be sanded can be placed, and the saw bench has the additional feature of being tiltable.

By the use of the jigs and sandpaper disc these triangles were very quickly finished and each was a duplicate of the other. The jigs will be saved, as the occasion may arise again.

WINDOW VENTILATOR.

W. S. Jackson, Instructor, Union High School, Grand Rapids, Mich.

The plan of a window ventilator simple enough for grade boys to construct is here offered. The project was designed as a substitute for the old tool rack, used to acquaint boys with the brace and bits. Also, to overcome in a measure the cause of a common criticism of school industrial work by factory men, i. e., the training is insufficient to have any *marketable value*. However, since it was made by boys before they constructed projects involving much material, it proved to be of excellent value in giving practice with the saw and plane upon a reasonable sized board instead of using only short bits of wood as most objects made require.

Laying out the holes and levers is an exercise which demands the best effort of any boy.

Any soft wood available is satisfactory for its construction.

When in position under a window the levers on the ventilator hold the top out making it practically storm proof. Soot and dust may be kept out by a thin cloth covering but this is hardly necessary for the holes allow the air to enter in such a manner that no draft is caused to carry dirt or give colds.

As duplicates are desirable no boy can have the excuse that his brother made one and he does not need another one. Also boys who work fast may make a pair and not feel they are wasting valuable time.

A HANDY SHOE REPAIRING STAND.

E. G. Limprecht, Morgantown, W. Va.

A Handy Shoe Repairing Stand is presented as a companion piece to A Handy Shoe Polishing Stand published on page 78 of the February issue of the *Industrial-Arts Magazine*.

The scarcity of leather and consequent high price of shoes makes it imperative that we get the most out of them, and next to keeping your shoes looking nice is keeping them in good repair.

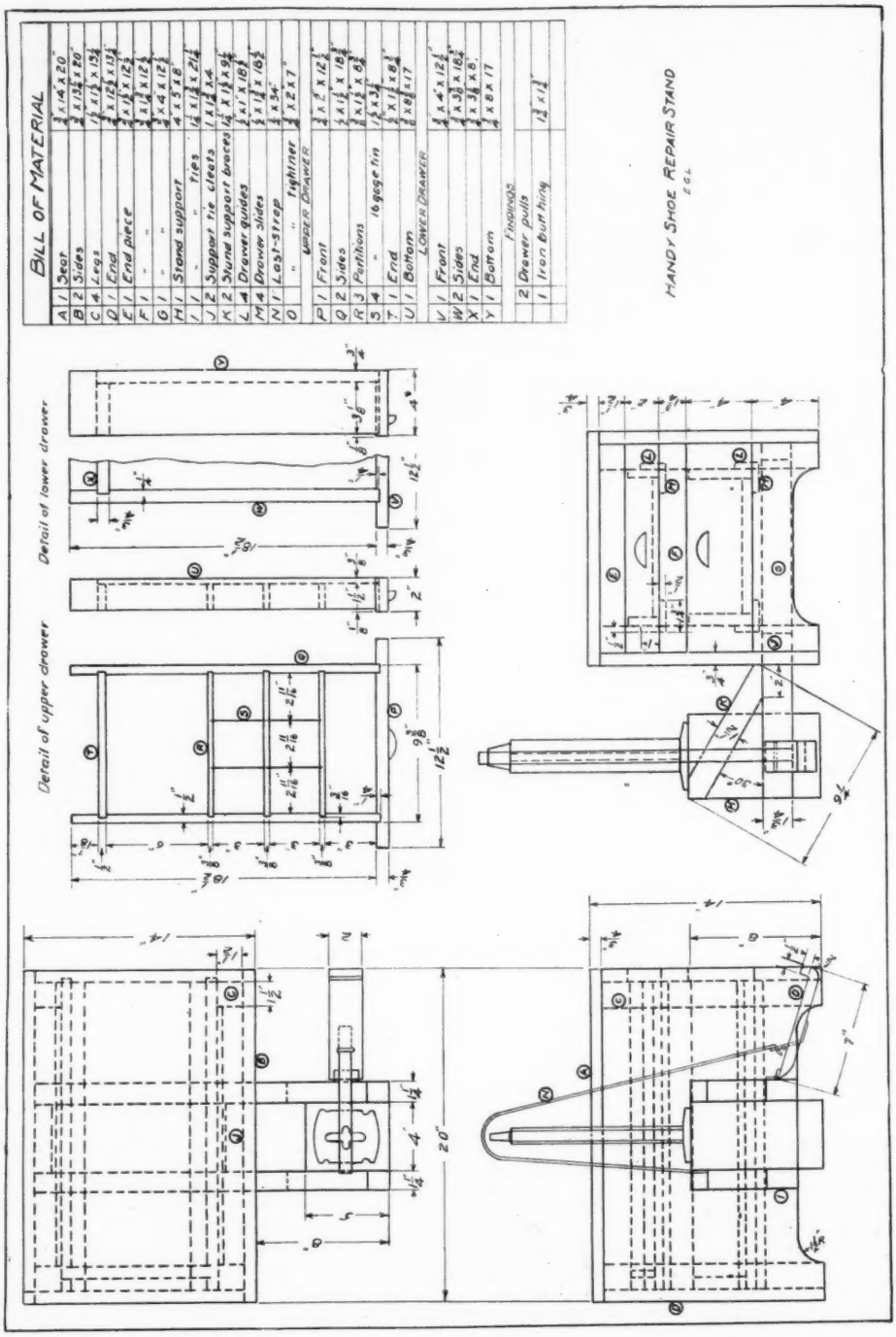
Even the smaller towns usually boast of an electric shoe shop, and it is well to have repairing done by an expert, but he is often taxed to his capacity and at any rate a great many persons still prefer to do their own repairing.

As a vocational subject shoe repairing has many possibilities, having already been successfully tried in a number of schools.

The picture shows one of a number of these stands made in the writer's classes in the public schools of Bisbee, Arizona. These stands were for the free use of the students in the various schools of the district, the one in the high school proving very popular with the football squad, and was in almost constant use during the season for replacing cleats and torn soles. In several instances football shoes were made by putting cleats on suitable shoes purchased from the local stores.

The stand shown in the drawing differs from that of the picture in that it is equipped with a strap and lever for holding the shoe solid on the last. This is done by placing the strap across the instep of the shoe after it is pulled on the last, and adjusting to a convenient length with the buckle; the strap is then tightened by putting pressure on the lever with the foot.

The upper drawer is shallow and contains partitions for the knife, awl, punch and various assortment of tacks.



DETAILS OF HANDY SHOE REPAIR STAND
Designed by Mr. E. G. Limprecht.

In use this drawer should be pulled out far enough to provide a tray for the tacks.

The lower drawer is deep and is intended for the lasts and heavier tools.

Locks may be placed on the drawers if it is found desirable.

A simple shoe repair outfit sold by mail order houses will be found very serviceable for the beginner. More pieces may be added from time to time as the worker grows in skill.

Mr. George Henry Jensen, formerly of Stockton, Cal., has for the past year acted as Assistant to State Vocational Director C. R. Frazier of Washington in the capacity of Supervisor of Teacher training for the Trades and Industries. In this connection itinerant training for men in the service has been offered as well as in Extension Course for superintendents, principals and others interested in industrial education.

The work offered is divided into nine lecture topics, with discussions to correspond with the nine monthly two-hour class meetings.

The schools of Cleveland, Ohio, have been refused a share of the state funds for industrial education because tuition is charged for the work in night classes. The decision was given to the school authorities by the Columbus bureau in charge of the appropriation of Smith-Hughes funds. The bill provides that eighty per cent of the expenses of industrial classes may be refunded if the instruction is free.

HOW A CITY AND A SCHOOL MET THE EPIDEMIC.

By Charlotte A. Morton, Director Household Arts Department, State Normal School, San Jose, California.

When the influenza epidemic reached San Jose, California, it rapidly developed alarming proportions. The local hospitals, usually more than adequate for any situation, soon overflowed. The call for helpers became daily more urgent in spite of heroic efforts of doctors and trained nurses, and the generous response of women with home nursing experiences. Local papers printed harrowing accounts of whole families ill without nurses, often without food supplies or sufficient warm clothing to ward off the fatal chill. These families were widely scattered. It became evident that many lives could be saved only by providing hospital room where a few nurses could care for many patients.

All schools had been closed, among them the state normal school at San Jose. The city board of health and local leader of the American Red Cross inspected the normal school buildings, and found that one of them offered almost ideal conditions for a hospital. It is located some distance from other buildings, and is built on the model of California's best schools, with much window space that allows sunlight and fresh air to flood the schoolrooms.

It was agreed that a convalescent hospital was most necessary. One of the dangerous features of influenza is the weakened condition in which it leaves the patient. Altho apparently well, he is liable to serious complications if he suffers from exposure or improper nourishment, as any patient does who returns home to unhealthful conditions before he has regained normal strength.

It was found that if the regular hospitals could be relieved of patients in the convalescent stage, their ward space and force of nurses would be sufficient to handle all those patients still in the dangerous fever stage. So the normal school building was chosen as a convalescent hospital, and placed in the charge of a young doctor whose energy and organizing ability were equal to the emergency. His group of helpers consisted of one trained nurse and 75 untrained volunteers, most of whom were teachers and students of the normal school, who worked in relays a few hours at a time.

Preparations were rapid and complete. As no civic organization had funds for such an emergency, an appeal was made straight to the people of the city. They were asked to donate beds and bedding, foods and hospital supplies.

The response was thrilling. It was a lesson in the fundamental goodness of human nature. The people can be trusted! When a call comes, how nobly they respond: to what heights of self-sacrifice and depths of self-denial they will go! High and low, rich and poor responded, each in proportion to his resources.

One of the eight wards in the San Jose convalescent hospital, with nurses assembled for the picture. The beds, bedding and clothing for the patients, also flowers and toys, were contributed by townspeople.

"I wish I could do more," a motherly looking, thinly clad woman would say, as she made a small offering of a few potatoes, or some worn garments, or a baby's outgrown crib.

"I wish I could do more," a richly dressed woman would earnestly exclaim, as her chauffeur unloaded from her limousine her magnificent donations.

"We're not doing half what we wish we could do," baker and dairyman would remark with the same earnestness, as they delivered daily donations of their goods.

"Is there anything *else* we can do?" a florist employe would inquire, after filling every vase in the hospital with choice flowers.

"Let me know—call on me if there is any service I can render," said all alike in accents that brought tears to the eyes of more than one worker, herself risking her life in performing the hospital duties.

The diet kitchen was organized and directed by the faculty of the state normal school, under the direction of the household-arts department, the members of which, in common with hundreds of other home economics departments in other parts of the country, were thus in a position to prove the practical value of home economics training. They planned the menus and organized the force of helpers. A captain was chosen for each day and with this captain other members of the faculty worked, often coming at 6 o'clock in the morning and staying until the work was finished at 8 or 9 o'clock in the evening.

Other people, not members of the faculty, also volunteered, often spending long hours in the kitchen—then adding their names and addresses to the list of those available for service at any time, if needed.

Closely examined, the list reveals mothers of families who left their busy homes to join in the relief work for a few hours during which they otherwise could have rested from their own labors; teachers who divided their time between diet kitchen and Red Cross sewing rooms; normal school and high school students willing to work during the vacation enforced by the epidemic.

Daily statements were made in the newspapers of the supplies needed for the next day, and generous indeed was the response. Within six hours after the kitchen opened, the shelves of the pantry were loaded with supplies, and they were kept loaded during the two weeks that the hospital was open. Following are the amounts of various foods donated:

One hundred and fifty-four quarts of canned fruit and vegetables, 150 glasses of jellies and jams, 25 quarts of fruit juices, one and one-half boxes of lemons, four boxes of grapes, one bunch of bananas, one box oranges, one box

The diet kitchen in the Normal School Cafeteria, operated during the epidemic by the faculty of the school, directed by the Household Arts Department.

carrots, box celery, box tomatoes, three sacks of potatoes, box spinach, parsnips, turnips, cabbages, three boxes dried apricots, dried prunes, eight pounds sugar, 266 loaves of bread, 180 quarts of fresh milk, box of condensed milk, seven and one-half quarts of malted milk, six bottles of Mellin's and other prepared foods, 40 dozen eggs, 43 pounds butter, 30 pounds cocoa and chocolate, 15 pounds cheese, three boxes crackers, 30 pounds substitute flours, 200 pounds cornmeal, 25 pounds oatmeal, 12 packages breakfast foods, 20 pounds macaroni, 20 pounds spaghetti, 20 pounds rice, 12 packages noodles, 15 pounds coffee, 50 pounds meat, 12 packages jello, eight quarts bread pudding, 12 quarts sago pudding, four quarts jello, 18 quarts custard, six quarts gelatine pudding, three cakes, 20 quarts soups and gruels, three pounds tea, two gallons vinegar.

From the food contributed an average of 75 people, including the hospital patients and those nurses and helpers whose hours on duty made it inadvisable to eat elsewhere, were fed three times a day for thirteen days. When the hospital closed earlier than was anticipated, stores of perishable food remaining on hand were sent to the National Defenders' Club to be dispensed among homes where needed for the sick, and the nonperishable foods were placed where most needed by the directors of the San Jose chapter of the American Red Cross.

FOOLING THE FLU.

Harry G. Clarke, Modesto, Cal.

In the month of October, after the schools of Modesto, California, had been running six weeks, the Spanish Influenza epidemic became so acute that the authorities closed all places of public gathering. This order affected alike the churches, theaters and schools. Gauze masks were ordered worn, cases of the disease were segregated, and other sanitary measures taken thruout the city. The 75 teachers of the school system, thinking the matter merely a temporary affair, plunged into war work and relief activities. The days passed into weeks and the weeks into months, until, from an educational viewpoint, the matter became distinctly alarming.

At the end of the ninth week of enforced vacation, the ban was lifted, masks put aside, and the old duties resumed. Barely two weeks elapsed until the epidemic broke out in a more virulent form than ever. Everything was ordered closed again, and the teachers faced the alternatives of idling or of figuring out some way whereby the situation might be saved and the school work carried on. They chose the latter and evolved a plan of teaching by correspondence. The scheme, in brief, was as follows: Daily assignments of lessons, from the primary grades thru the high school, were published in both morning and evening papers; pupils worked their lessons at home and either sent by mail or brought in person their written papers; the teachers were in their regular rooms thruout the school day to aid those who came for assistance.

One young physician, one trained nurse, and a force of volunteer untrained nurses, most of whom are teachers and students of the San Jose Normal School, were served three times daily from the diet kitchen.

H. C. GIVENS

Professor of Industrial Education, University of Arkansas.

Mr. Givens organized the department of manual arts at the Kansas State Manual Training Normal School and acted as director of the Department of Industrial and Applied Arts until September 1918. He acted as local director of training for enlisted men assigned to the Normal School since the beginning of the war up to the signing of the armistice. After the closing of the training classes, he assumed the chair of industrial education at Fayetteville.

The students were kept moving, were not allowed to congregate, and were obliged to wear gauze masks.

So far as the academic studies were concerned, the above plan gave most admirable results; but on its face it was not feasible for work in the manual arts. An entirely different plan had to be worked out for this department, and the following is what was finally decided upon: The shop classes were divided into sections of six, for a ruling of the Health Officer made more than six persons gathered together, a crowd; the week was divided into half-days of four hours each, from 8:00 A. M. to 12:00, and from 12:00 to 4:00 P. M.; each sub-section was assigned to a half-day in its regular order; that is, a group of students belonging to the first period class, and coming at the beginning of the roll, were assigned to Monday morning, the next division to Monday afternoon, etc. In this manner, each boy enrolled in the manual arts department was allowed to get in four hours of uninterrupted work each week in the shops. This was about two hours less than was allowed in a week of regular school, but the difference was overcome by assignment of outside work, such as papers on the various woods and finishes in the woodworking department, on iron, steel and toolsmithing in the forging department, and on gas engine construction and ignition systems in the auto repair department.

The results of this new method of shopwork have been simply astounding. It has been thought and taught that the boy of high school age is incapable of long sustained application. As a matter of fact and record, the boys of the Modesto High School have proved that in four hours of continuous work they could accomplish more than in a double period each day for a week. Of course, there were cases where a student was not at his best after two or three hours' concentration. Such cases were handled on their individual merits; some given a short recess, some started at the same work from a different angle and some started at entirely different problems. These cases were rare; the average boy worked thru the four hours, seeming to get a better and better grasp of his problem as the time passed.

Now we are wondering whether we can ever go back contentedly to the old rut. Has this new experience so shaken us from our old moorings that we can never again be hitched there? At least, we have seen the same thing done in a different way; we have seen new ideas spring into being thru necessity, and we have seen these ideas blossom into results that we did not deem possible. Perhaps, the Flu, with all its dreadful toll of sickness and death, has been, in one way, a blessing in disguise.

EASTERN ARTS ASSOCIATION CONVENTION.

The annual convention of the Eastern Arts Association will be held in the Hotel McAlpin, New York, April 17, 18 and 19. This meeting is expected to be the largest annual gathering in the country of teachers, directors and supervisors of the fine arts, the industrial arts, the household arts, the agricultural arts, and the printing arts, the last named group being included this year for the first time.

The general subject for the meeting will be the new demands placed upon teachers of the arts during the period of reconstruction and the great opportunities before them in the development of art in industry.

The convention headquarters will be at the Hotel McAlpin and the general and sectional meetings will be held at the McAlpin and the Waldorf-Astoria Hotels.

The Program.

Wednesday Evening, April 16.

Reception and registration.

Thursday Morning, April 17.

General Session—Pres. Augustus F. Rose, presiding.

Address of Welcome, Dr. W. T. Ettinger, Superintendent of Schools.

The Plan for the Co-ordination of Industrial Arts Work in the Intermediate School with Unit Trade Work and Technical High School Work, Lewis A. Wilson, Director of the Division of Agricultural and Industrial Education, New York Department of Education.

Thursday Afternoon, April 17.

Art Session—Mr. Morris Greenberg, presiding.

Teaching Art Appreciation Thru Story Telling, Miss Rose Collins.

Graphic Methods in the Teaching of Costume Design, Miss Ethel Traphagen.

Color Printing as a Class Problem in a Commercial Design Course, Mr. Raymond Carter.

Manual Arts Session—Mr. E. A. Reuther, Trenton, N. J., presiding.

A Recent Experiment in Junior-Senior High School Industrial Arts, Mr. A. H. Edgerton, Teachers College, New York.

Qualities and Qualifications of the Teacher of Manual Arts, Mr. John C. Brodhead, Assistant Superintendent of Schools, Boston, Mass.

Household Arts Session—Miss Griselda Ellis, Newark, N. J., presiding.

The Decorative Side of Home Making, Miss Isabel E. Lord, Pratt Institute, Brooklyn, N. Y.

Vocational Home Making Work, Miss Helen R. Hildreth, Worcester Trade School, Worcester, Mass.

School Garden Session—Mr. Van Evrie Kilpatrick, New York, presiding.

The 1918 School Gardens of New York City.

Ungraded Classes—Miss Elizabeth Farrell, New York City, presiding.

General Session—Pres. Augustus F. Rose, presiding.

Democracy and Beauty, Dr. Elmer Ellsworth Brown, Chancellor of New York University.

Art, Industry and Education, Mr. Frank Alvah Parsons, New York School of Fine and Applied Art.

Reconstructed Patriotism, Miss Elizabetth Marbury, President Women's National Committee of the American Defense Society.

Friday Afternoon, April 18.

Art Session—Mr. Herbert R. Kniffin, New York, N. Y.

Changes in Methods of Teaching Art to Foreign Children, Miss Deborah Charcy, Teacher of Art, New York, N. Y.

A Practical Experiment in Home Decoration, Mrs. Mary L. Ackerman, Teachers College, New York, N. Y.

The Story Hour Illustrated, Miss Anna C. Chandler, Metropolitan Museum of Art, New York, N. Y.

Manual Arts Session—Mr. J. J. Eaton, Yonkers, N. Y., presiding.

Lessons from Intensive Training for War Emergencies: Mr. C. R. Dooley, Director of Vocational Training of the War Department's Committee on Education and Special Training, and Mr. E. E. McNary, Head of the Education and Training Section of the U. S. Shipping Board.

Household Arts Session—Miss Ina R. Crawford, Jersey City, N. J., presiding.

Individuality in Dress, Miss Anna L. Cobb, Editor School Arts Book, Cleveland, O.

Art, Dress and Their Place in Education, Miss Zeralda Rains, New York School of Fine and Applied Art Textiles.

Textiles, Mr. M. D. C. Crawford, Editor Women's Wear, New York.

School Garden Session—Mr. Van Evrie Kilpatrick, New York City, presiding.

Cooperation in School Garden Work.

Printing Session—Mr. R. A. Loomis, Jersey City, N. J., presiding.

Design in Printing, Mr. Harry L. Gage, Carnegie Institute, Pittsburgh, Pa.

Qualities the Employing Printer Should Find in the Boy Coming from Public School Print Shop, Mr. Clyde Oswald, American Printer, New York, N. Y.

Friday Evening, April 18.

The Arts in Post-War Education, Dr. David Snedden, Teachers College, New York, N. Y.

Saturday Morning, April 19.

Members' Activities in the War, Mr. Royal B. Farnum, Mechanics Institute, Rochester, N. Y.

The Merchant's Interest in Industrial Art, Mrs. Annette S. Pascal, Art Alliance of America, New York, N. Y.

Industrial Art—Our National Opportunity, Dr. James P. Haney, Director of Art in the High Schools of New York City.

WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION MEETING.

The Western Drawing and Manual Training Association will hold its twenty-fifth annual convention at the Chicago Art Institute, Chicago, Ill., from May 6-9. The general topic for the meeting will be New Ideals and Reconstruction in Education.

Tuesday, May 6.

Manual Training Session—Mr. H. C. Givens, chairman.

Experiments with Tests and Standards in Manual Arts, Mr. Albert F. Siepert, Bradley Polytechnic Institute, Peoria, Ill.

Household Arts Session—Miss Emma Conley, Madison, Wis., chairman.

Furnishing a Small Home, Evelyn Jensen, Extension Division, University of Wisconsin, Madison, Wis.

Vocational Education, Miss Anna Richardson, Acting Assistant Director of Home Economics Education, Federal Board of Vocational Education, Washington, D. C.

The Home Economics Teacher as a Factor in Child Health Education, Miss Sally L. Jean, Child Health Organization, New York City.

General Session.

Response and Key to Program—Pres. Ira S. Griffith, University of Missouri, Columbia, Mo.

Wednesday, May 7.

Art Session—Miss Nama A. Lathe, School of Education, University of Chicago.

Specifications for the "New Building" Demanded by the New Times.

Suggestions from Master Workmen—Ways and Means in Art Teaching to Meet These Specifications.

General Session.

Topic: Reconstruction in the Fine and Manual Arts in Secondary Schools.

A Basis for Reconstruction of the Curriculum, Dr. John F. Bobbitt, School of Education, University of Chicago.

Some New Ideals Suggested by the Experience of the Vocational Units of the Students' Army Training Corps, Robert W. Selvidge, Peabody College, Nashville, Tenn.

Printing Session—Leonard W. Wahlstrom, Chicago, Ill., chairman.

Thursday, May 8.

General Session.

Topic: Art in Industry—Wanted a National Policy.

A National University of the Arts, Miss Emma M. Church, Church School of Art, Chicago.

A Plan for a National School of Industrial Art, Charles A. Bennett, Bradley Polytechnic Institute, Peoria, Ill.

State Schools of Industrial Art in Relation to a National Program, Dr. Charles A. Prosser, Director Federal Board for Vocational Education, Washington, D. C.

Address: Lionel Robertson, Art Alliance of America, Chicago, Ill.

Vocational Education Session—Mr. Hans W. Schmidt, Oshkosh, Wis., Chairman.

Our Common Schools and Vocational Education, Secretary State Board of Industrial Education, Madison, Wis.

Some Essentials of Trade Teacher Training, James McKinney, University of Illinois, Urbana.

Friday, May 9.

General Session.

Vocational Education v. Vocational Training, Emery R. Filbey, School of Education, University of Chicago.

NEW BOOKS

Trade Foundations.

By R. H. Rodgers, J. I. Sowers, L. D. Perry, C. W. Sylvester, G. D. Brace and others. Cloth, crown octavo. 522 pages. Price $1.25, net. Guy M. Jones Co., Indianapolis, Ind.

It is the common opinion that textbooks follow educational theory and practice, that they are a guide or help which has been evolved from widely accepted practice. In many respects the present work reverses the situation: it is a pioneer in outlining material which is largely untaught, because a complete system of prevocational study such as it contemplates has not been developed in any one school. It required courage and educational vision to plan the work and to organize all the details. The result is a reasonably interesting volume the effect of which we think will make itself felt very widely.

The work is divided into three general parts: (1) the occupations common to the producing or fundamental industries, (2) materials, tools and operations of these occupations and (3) drawing and prevocational shop-work to illustrate the fundamental materials, tools and operations of the leading industries discussed in parts one and two. It is the belief of the publisher and the co-authors that the study and observation of and participation in a large number of occupations, following the lines of the three parts of the book as above outlined, are an essential part of any prevocational education scheme.

Section one consists of compact descriptions of trades and groups of trades and includes much material usually supplied in informational courses on vocations. Section two takes up the materials used and traces their origin, manufacture and use. Section three outlines the history and present use of tools in the chief industries. Section four takes up the common operations or processes for working wood, metal, sheet metal, cement, clay, etc., and for the most common occupations such as carpentry, cabinet making, painting, machine shop, forging, plumbing, electrical work, binding, etc. In section five, drawing is explained as the language of men in the trades. Section six compresses within a space of 88 pages a collection of prevocational projects prepared by twenty leading specialists in various lines of work. The projects are directly linked up with the previous sections. They illustrate both typical operations as well as products of the respective industries. Very complete references are added in each of the six sections.

The book is both text and reference work and is adapted in style and content to the seventh, eighth and ninth grades. For so large and varied a work it represents a remarkable coherence and unity and a surprising freedom from differences of viewpoint on topics that are not absolutely settled. The illustrations are varied and complete and the typographical dress is well chosen.

Just one point seems to require revision: The publisher's statement which contains a very narrow definition of education, is superfluous in a text. It would be decidedly helpful to have the body of the statement developed to outline several plans of using the book.

School of Practical Electricity.

Book I. Fundamentals of Electricity and Wiring. Cloth, crown Octavo, 60 pages. Price $1.00. Electroforce Publishing Co., Milwaukee, Wis.

This book, which is the outgrowth of fifteen years of teaching, by a group of instructors in the Milwaukee School of Engineering, covers the simplest definitions and facts of electricity and adds descriptions of simple bell, telegraph and telephone circuits. The material is presented in such form that it can be taught by the average manual training teacher or science teacher who desires to give a practical prevocational slant to the subject.

Demonstration of Woodwork (Parts I, II, III).

By Clinton Sheldon Van Deusen. Cloth, 24, 32, and 26 pages, respectively. Price, $0.25, ea. Manual Arts Press, Peoria, Ill.

These three pamphlets represent a course in wood working for country schools. They are extremely complete and detailed in the illustrations and descriptions of the fundamental processes so that any 10 or 12-year-old boy can use them and any teacher be she ever so inexperienced can obtain results with her little flock. If any criticism is to be passed on the books, it is due to the meagerness of the problems and the likelihood that boys will complete them too quickly. This could readily be remedied by an additional booklet containing further problems of use on the farm or of play interest to the boy.

Woodwork Joints.

Cloth, 87 cents. Evans Bros., London, Eng.

This is a valuable reference book for the advanced cabinet maker. To a very practical and well illustrated description of the making and use of the ordinary joints, it adds a great number and variety of special joints and special forms of the common joints. It is fully illustrated.

Essentials of Alternating Currents

By W. H. Timbie and H. H. Higbie. Cloth, 374 pages. John Wiley & Sons, New York.

This book offers a complete, practical course in alternating currents and appeals to us strongly for its simplicity as well as wide utility. It is a "practical" work in the sense that it is written from the standpoint of the experienced worker who is not an engineer and offers very complete, theoretic discussion combined with the simple mathematics and direct application to present day practice.

The book will appeal most strongly to evening classes and to apprentices in trade or continuation schools.

Industrial Work of the Gary Public Schools.

By Charles R. Richards. Cloth, 204 pages. General Education Board, New York, N. Y.

This report has been anxiously looked forward to for three years. It neither meets the expectations of the opponents of the Gary plan who believed that the schools should be criticised mercilessly, nor yet the hopes of the enthusiasts who have sought unqualified endorsement. The report is both endorsement and criticism; it approves of the general plan and purpose of Mr. Wirt, but it finds much fault with details of application. It does not reach the conclusion that the plan is worthy of general adoption but it points out unmistakably the fact that the Gary plan offers a large enrichment and diversification of the school curriculum and that, from the vocational standpoint, it offers many features that prepare children for a wise choice of an economically valuable occupation. It shows too that administratively there are many details which any school system can use to advantage in making the school plant of greater social and educational value to the community.

Teachers will find the report of intense interest.

Essentials of Drafting.

By Carl L. Svensen. Cloth, 184 pages. Price, $1.50, net. D. Van Nostrand Co., New York.

This is a revised edition of a book issued in 1918. It is splendidly adapted for evening classes of mechanics and others who have practical shop experience. Its chief excellencies are briefness and clearness. The final chapter, containing problems, questions and exercises, is the best of its kind which we have seen.

Vocational Civics.

By Frederic Mayor Giles and Imogene Kean Giles. Cloth, 252 pages; illustrated. Price, $1.30. Macmillan Company, New York.

This book is a carefully prepared study of occupations and is intended to furnish pupils in junior high schools and first or second year classes of standard high schools with basic facts requisite to the choice of a life career. The book appeals to us chiefly for its healthy attitude on vocations. Money making as such is subordinated to social and personal ideals and fundamentally important human values are emphasized.

The Cooperative School. Wm. T. Bawden. Specialist in Industrial Education, Bureau of Education, Washington, D. C. Industrial Education Circular No. 2, February, 1919, of the Bureau of Education. The College of Engineering of the University of Cincinnati in 1906-7 undertook what has come to be known as the cooperative system of education. The plan provides, in brief, that the students in any class shall be divided into two groups, one being in school while the other is at work in the industrial plant. The workers are arranged in pairs and the students alternate between school and productive work. The pamphlet discusses the plan as carried out in the secondary schools and the technical colleges and point out the advantages to be derived.

Some Advantages of Industrial Training. Training Bulletin No. 8, U. S. Training Service, of the Department of Labor, Washington. The U. S. Training Service has gathered and analyzed facts which tend to show that three out of every four workers contribute much less than the average production of the four, and that this joint average generally falls below 35 per cent of a fair day's output. This pamphlet, which is intended as a promoter of industrial training for workers, discusses the causes of low production, the opportunity for training, protection of workmen, increase of output and the application of training.

NOW, ARE THERE ANY QUESTIONS?

This department is intended for subscribers who have problems which trouble them. The editors will reply to questions, which they feel they can answer, and to other questions they will obtain replies from competent authorities. Letters must invariably be signed with full name of inquirer. All questions are numbered in the order of their receipt. If an answer is desired by mail, a stamped envelope should be enclosed. The privilege of printing any reply is reserved. Address, Industrial-Arts Magazine, Milwaukee, Wis.

Soldering Aluminum.

To the Editors:

In the April number, under caption, "Now, are there any questions?", I find the statement that it is impossible to solder aluminum. This idea seems to be quite prevalent owing to the fact probably, that for some time after aluminum came into use, no method of soldering it was found.

Soldering aluminum, however, is now quite common and no more difficult than soldering tin, and is much easier than soldering iron or jewelry.

For the benefit of S. H. H. and other readers of the INDUSTRIAL-ARTS MAGAZINE I will give a description of the process.

A reliable aluminum solder is made up as follows: 75.5 per cent tin, 18 per cent zinc, and 2.5 per cent aluminum. These parts are determined by weight. In mixing, the aluminum should first be melted in a black lead crucible; to the liquid aluminum add the zinc, and heat until melted; then add the tin and stir with a piece of iron until the whole is thoroly mixed. Bend a strip of sheet iron into a "V" shaped trough, and into this trough pour the mixture. This will give a long thin bar that is easily handled.

Aluminum solder requires no flux or acid, and therefore has little or no capillarity. This makes it necessary to thoroly coat both surfaces of the metal to be joined. The only soldering iron needed may be made as follows: Flatten the end of a ¼ inch brass rod of convenient length; file the flattened end to somewhat of a point; drive the other end into a file handle, and your tool is complete with the exception of "tinning," which is done by rubbing the flattened end in a small quantity of the aluminum solder, the solder being melted with a gas or gasoline torch, and kept hot until the coating is complete. The coating of the parts to be soldered is done in the same way that a piece of tin is coated for soldering. Bind or press the coated surface together and apply the heat until the solder in the joint is fused.

The rod may be used in the same manner as an ordinary soldering iron to completely fill cracks and crevices.

Somewhat more heat is required for soldering aluminum than for ordinary tin work. Do not mix aluminum and tin solder or try to do two kinds of soldering with the same iron.

As in any soldering, the parts to be soldered must be made bright and clean by scraping or sand papering or both, and the whole process is usually performed with the flame directed against the work.—*L. M. Colt, James Milliken University, Decatur, Ill.*

Recipes for Soap Making

To the Editors:

In response to query by L. L. W. on "soap making," I submit the following recipes, one of family size, the other of a size suitable for classwork or for the small family:

Hard Soap.

Remelt all fats saved, and cook with several pieces of raw potatoes. Skim and strain thru cheese cloth. Or, let cool, add water and bring to a boil, then strain and cool. When cold, skim grease from the top.

Put 2½ pints of cold water in a granite or stone dish and add 1 lb. Lewis Lye and 3 heaping tablespoons of borax. As the lye dissolves, the mixture becomes hot and should be allowed to cool till the temperature is about 70 degrees. Now take 5½ lbs. of the clarified fat, and warm till melted. Slowly pour the lye on the grease, stirring meanwhile and when about the consistency of thin honey, pour into wet pans, or boxes lined with cloth. When cold, cut the soap into cakes.

Hard Soap—Small Recipe

¼ cup lye
½ cup cold water
½ cup melted fat
1 teaspoon borax.

Same directions as above.

Mrs. H. A. Tice,
Instructor in Home Economics, Glencoe, Minn.

Daily Marking System for Manual-Training Classes.

917. Q:—Will you kindly publish a practical individual daily marking system for woodwork done by boys in a grade school?—*C. E. J.*

A:—Two pamphlets which will be found helpful to teachers are *MacDonald's Grading Pupils in Vocational Subjects*, 15 cents, D. J. MacDonald, Indiana University, Indianapolis, Ind.; *Eaton's Record Forms for Vocational Schools*, World Book Co., Yonkers, N. Y.

Articles on this subject which have appeared in the Magazine may be found by referring to the issue for April, 1916, p. 178 and for December, 1914, p. 253.

Frame for Table Lamp.

927. Q:—"Please send information on how to make a wooden frame for a gas lamp. The frame is to be square, with four panels of art glass set in. How can the four frames be fastened together securely to make one large shade?"

A:—There are two methods of building a four panel shade—one in which three-ply veneer stock is used for each panel—the surfaces sawed to the desired design, and plain butt joints used on the corners. These are glued, nailed, and the edges covered with strips of metal or thin wood. This is the simple method, but it does not leave a very neat and workmanlike job. The better method is to build up a panel for each side, and mitre the corners of the panels.

By way of explanation, in Fig. 1, we have illustrated the side view of a lamp shade 16″ square at the bottom, 6″ square at the top, and 5½″ in vertical height. We have also given the true length development of one corner of one panel. The development is obtained by laying out the side and top views of the shade full size—this will result, of

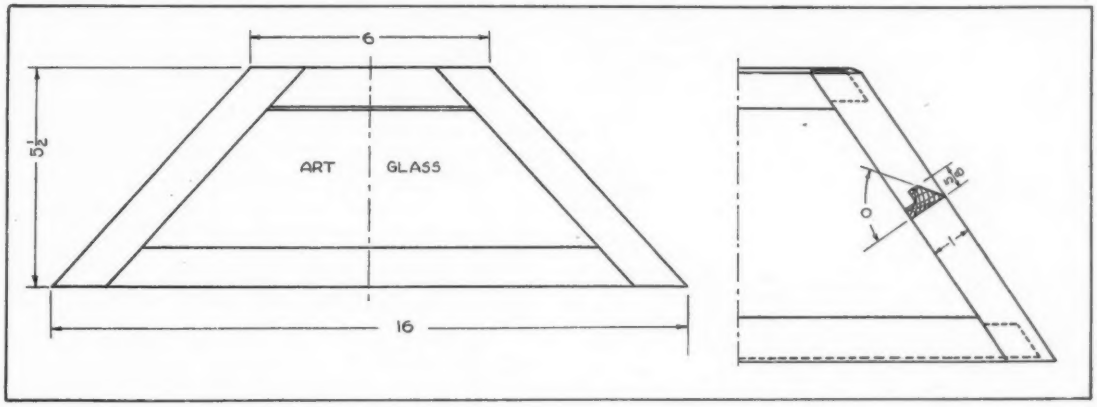


Fig. 1

course, in the drawing of a truncated square pyramid, and the true length is found by swinging one corner of the pyramid up to the center line of the top view, and projecting it down to the base line in the front view, then back to the apex of the pyramid. This explanation is detailed in any text on mechanical drawing, and is, undoubtedly, familiar to every teacher.

As to the mitre on the corners, it would appear at first glance to be 45°, but this is not the case when the panels slope. This angle will vary with the slope in every case—in this particular instance it is about 60°. To find this angle—*0* in Fig. 1—proceed as in Fig. 2. Conceive the sides to be plane surfaces and lay out one-half the top and front views, full size, as shown.

From any point on line *4-6* as point *8*, draw *8-9* at right angles to *4-6*. Project point *9* up to the top view, locating point *10*. Draw *2-11* equal to length *2-10*, and connect with *10-11*. Lines *10-12* and *11-12* are equal in length to line *8-9*. Angle *11-12-10* is the angle between the planes, and

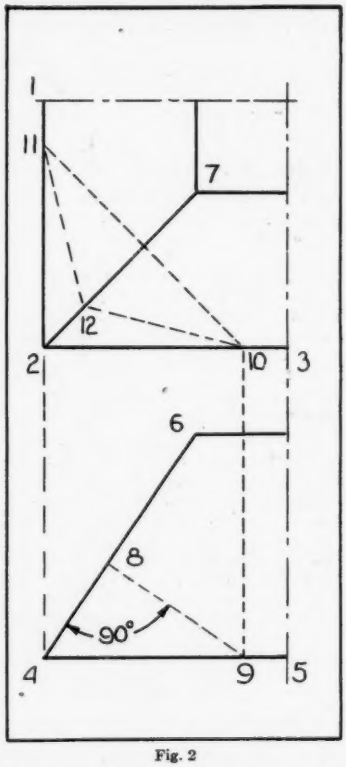


Fig. 2

angle *7-12-10* is the angle at which to cut each mitre. When these angles have been carefully cut and finished, glue up each panel—regular mortise and tenon construction. To fasten the panels together, saw a recess down the center of each mitre on the circular saw, and fit in splines. When all is ready, apply the glue and place each panel in position. Do not clamp, but wind the corners with damp cord. When this dries out, it will serve to pull the joints together. Of course cold glue must be used, otherwise the glue would set before the cord dried enough to pull up the joints. No nails should be necessary, as the spline, if properly fitted, will give the required holding power to the joint.

This problem is one of the most difficult to be found in school cabinet making, and it is only the most skillful of students who should be allowed to attempt it.—*Ralph F. Windoes.*

Setting Cane Panel.

931. Q:—"Will you please tell me how to put in a panel of commercial cane webbing as in the end of a library table?"

A:—Cut the seating a little larger than the panel it will cover. Rout out a groove about ¼" from the inside edges, and slightly wider and deeper than the fillets to be used. Place the seating between two cloths which have been soaked with hot water. This will cause it to expand. Brush hot glue in the grooves, put the seating in place, and drive the fillets home. Wipe off any surplus glue, and when the cane dries out, a tight panel will result. Of course the work must be carefully done so that the fillets fit tight.—*Ralph F. Windoes.*

Non-Conductor for Fireless Cooker.

934. Q:—"Which of the following materials is best adapted for a fireless cooker from the standpoint of being a non-conductor, and also of economy: Mineral wool, granulated cork, asbestos, sawdust?"

A:—In commercial cookers, mineral wool is the non-conductor most generally employed. Asbestos with a large percentage of magnesia is very efficient, but its weight is against it. For school work, it is the writer's opinion that sawdust makes the most practical insulator, as it is cheap, light in weight, and efficient.—*Ralph F. Windoes.*

Material for Phonograph.

929. Q:—We are building several phonograph cabinets. Would you please give me information as to the best material for the construction of the sound box? Would you recommend the same to be varnished or treated with a light oil.—*C. L. C.*

A:—Spruce is best for phonograph sound boxes. If this is not obtainable, use maple. Light oil is sufficient treatment.

EASTERN ART WORK ON EXHIBIT.

Three art conventions will be held this spring in New York City. The Eastern Arts Association will attract teachers from the Atlantic states and as far west as Ohio, and the middle of May will see the members of the College Art Association and the American Federation of Arts assembled for a week at the Metropolitan Museum of Art.

Education along practical art lines, one of the special interests of the Art Alliance of America, was shown at its galleries at 10 East 47th Street from April 5 to 19. In all, nineteen schools with courses in design were represented. The trade schools had displays of artistic industrial work, the Vocational School for Boys offered commercial design and sign painting, the Red Cross Institute for Crippled and Disabled Men exhibited jewelry work, and the Institute for the Deaf had a display of lettering. The work which was classified according to groups, included graphic arts, textiles, fashions, metal, wood, stone, clay, glass, leather, toys, novelties, interior decoration and stagecraft.

During the convention of the American Federation of Arts, the Art Alliance galleries are to be devoted to an exhibit of graphic arts organized in cooperation with the American Institute of Graphic Arts. This exhibition includes posters, magazine covers, advertisements, pamphlets, letterheads, lithography, color printing, containers, labels, wrappers and photographs.

The exhibition is intended to show the practical value of well designed printing from the standpoints of advertising quality and aesthetic interest. Original designs and printed products are shown side by side to indicate the importance of bringing these elements together for mutual consultation and cooperation. It has been carefully planned and developed in a systematic manner. The individual pieces on display have been hung in such a way that visiting art societies may arrange to borrow parts of the exhibition. It is planned to institute a number of traveling exhibitions for circulation under the direction of the American Federation of Arts.

The third annual exhibition of handicrafts and commercial and industrial arts was opened on April 3rd at the Art Institute, Milwaukee, Wis. The purpose of the exhibit was to establish cooperation between manufacturers, business firms, designers and craft workers in the state. The display consisted of handicrafts and commercial and industrial designs made by residents of the state.

The Layton Trophy, which is to be presented in competition to the high school art departments of Milwaukee for progress in art education, was dedicated at a public meeting held on April 4th at the Public Museum Auditorium. In connection with the dedicatory exercises, there was an address on "Art a Necessity" by Dr. James P. Haney, Director of Art Education in the high schools of New York City.

The presentation of the Layton Trophy in Milwaukee is in line with a similar movement in New York City for the recognition of talented art pupils in high schools, and for the guiding of their talent into the various lines of industrial art.